



Dundonnell Wind Farm Environmental Management Plan

Revision I

06/12/2018

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PLANNING AND ENVIRONMENT ACT 1987

PLANNING SCHEME MOYNE

PERMIT NO. 2015/23858/A

ENDORSED PLAN

SHEET 1 OF 301

SIGNED S. Menzies FOR

MINISTER FOR PLANNING

DATE: 8 / 1 / 19

ENDORSED TO COMPLY
WITH CONDITION

38, 40-50, 59, 62

OF PLANNING PERMIT

2015/23858/A

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- Appendix L – Tilt Renewables Environment Policy
- Appendix M – Project Figures

Revision History

Revision	Changes	Date	Prepared By	Approved By
A	Draft Document Developed	23/03/2018	JR	ED
B	Draft updated to address ED comments and EES requirements	28/03/2018	JR	ED
C	Draft updated to address TILT comments	06/06/2018	ED	ED
D	Site layout figure updated	21/06/2018	ED	ED
E	Updated for Agency Review	21/06/2018	CL	MG
F	Updated to address Agency comments	12/09/2018	ED	ED
G	Updated to address Agency comments	11/10/2019	ED	MG
H	Updated to address Agency comments	27/11/2018	ED	CL
I	Updated to address Agency comments	06/12/2018	KO	CL

1 Introduction

1.1 Purpose and application of the EMP

This Environmental Management Plan (EMP) has been prepared by Zenviron Pty Ltd for Dundonnell Wind Farm Pty Ltd. It has been prepared in accordance with the requirements of Planning Permit No. 2015/23858 (the Planning Permit), and is generally in accordance with Chapter 25 of the Dundonnell Wind Farm EES (June 2015).

The primary purpose of this EMP is to specify the measures required to manage environmental risks during the pre-construction, construction, operation and decommissioning stages of the Dundonnell Wind Farm (the Project).

1.2 Objectives

The primary objective of the EMP is to provide a framework of procedures to avoid or minimise the impacts of the construction and operation of the Project on the environment.

Further objectives of this EMP include:

- Provide certainty of delivery of the prescribed environmental outcomes during all phases of the Project construction.
- Implement a system for compliance with all applicable requirements, obligations and commitments for the Project including:
 - obligations and commitments from the environmental assessment process.
 - adhere to relevant legislative requirements.
 - adhere to licences, approvals and/or permits needed to construct and/or operate the Project.
 - develop, implement and monitor measures that minimise pollution and optimise resource use.

1.3 Environmental Policy

This EMP has been developed in accordance with the requirements of the TILT Environment Policy (Appendix L). Tilt Renewables Pty Ltd is the owner of Dundonnell Wind Farm Pty Ltd. This policy highlights that Tilt Renewables will ensure that its activities comply with all legal environmental obligations, its environmental impacts onsite are minimised, its activities do not lead to environmental pollution, and that it will communicate and promote environmental awareness and work with stakeholders to ensure positive environmental outcomes.

Environmental Key Performance Indicators (KPI's) will be continuously monitored and work instructions reviewed with the aim of eliminating risk and ensuring continuous improvement.

Personnel will be clearly assigned responsibilities for complying with work instructions, rectifying or reporting harmful environmental conditions, and actively participating in meetings and various training sessions on environmental issues. In addition, all personnel will be encouraged to raise suggestions for improvement of environmental performance.

1.4 Scope of EMP

This EMP establishes environmental management procedures to be followed by the construction Contractor personnel, and their Sub-contractors on the Project during pre-construction, construction and operational phases of the Dundonnell Wind Farm, and includes:

- Relevant planning permit conditions.
- A description of the Project, including construction and operation activities.
- Environmental Management Framework (EMF).

- Environmental management Sub-Plans.
- Details of relevant legislative requirements and licences, approvals and/or permits needed to construct and/or operate the Project.
- Details of environmental issues.
- Information on roles and responsibilities.
- Environmental management implementation strategies
- Monitoring and auditing of environmental performance.
- Details of the reporting.

The activities of any person or company contracted to the Project are covered by this plan. All activities associated with the onsite quarries are excluded from this plan and are covered exclusively under the plans developed for the Quarry Work Authority 1540.

2 Project Details

2.1 Project description

The proposed site for the Dundonnell Wind Farm (DDWF) covers approximately 4400 ha of private and public land located within the Woorndoo, Mortlake and Dundonnell districts. The site is located in the Moyne Shire approximately 28km west of Derrinallum and 12km east of Woorndoo. Mortlake is the nearest significantly sized settlement approximately 27km south-east of the site (refer Figure 1). The site is located wholly within land zoned for farming, which has been heavily cleared and the predominant activity is grazing.

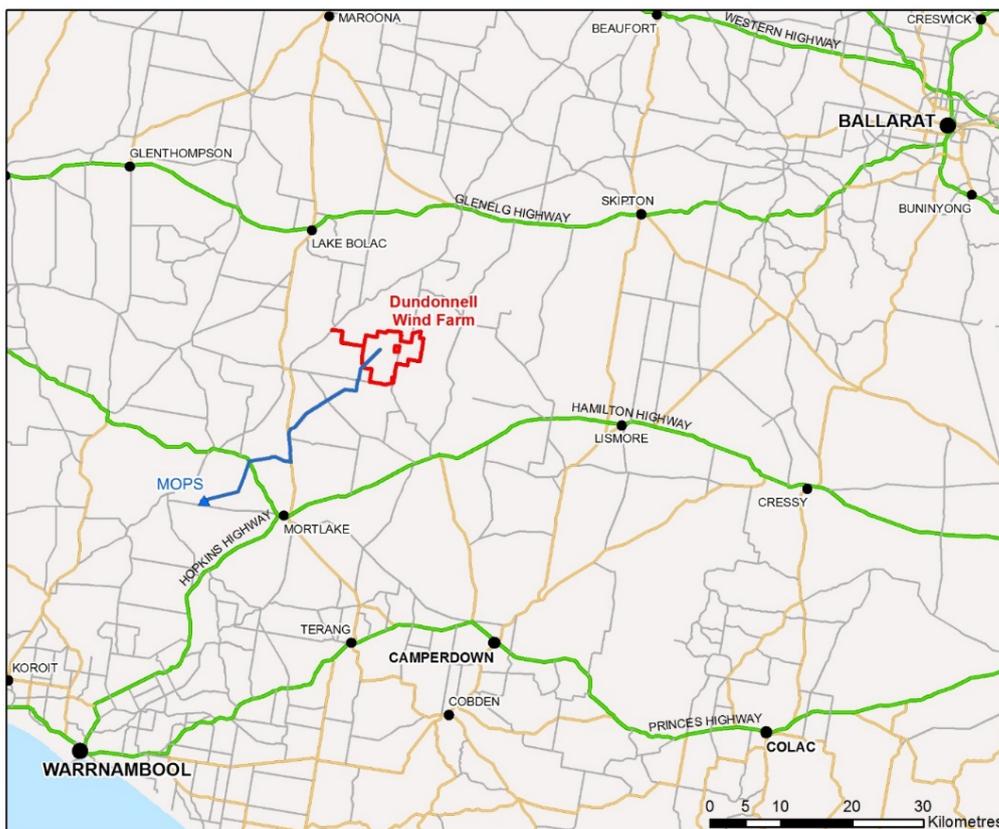


Figure 1 - Location of DDWF

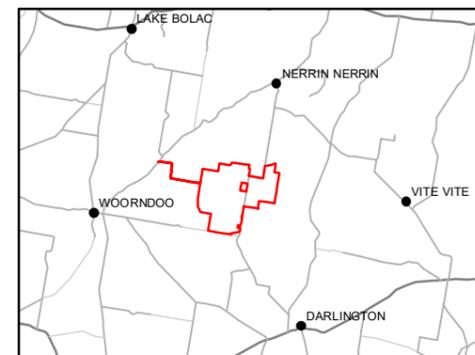
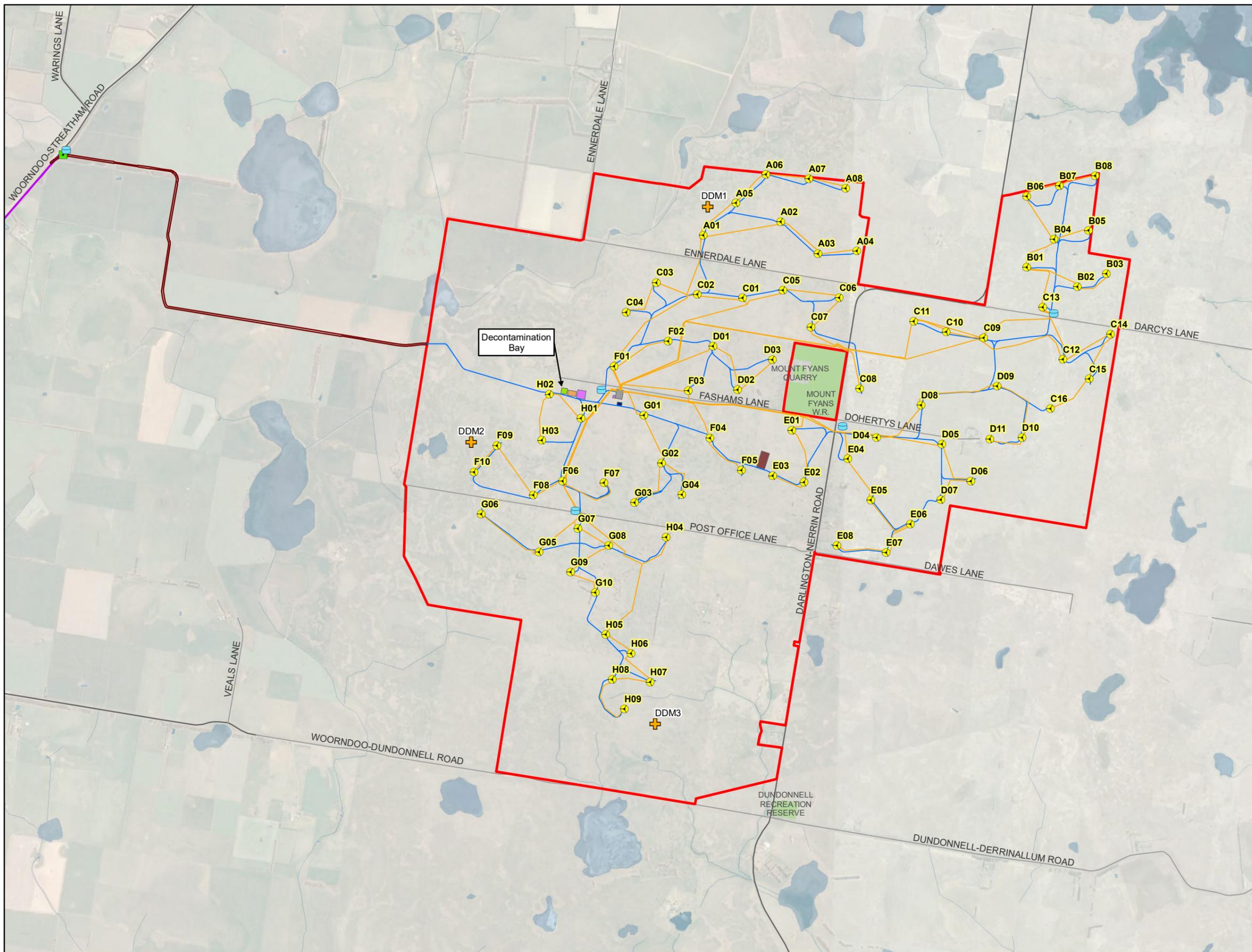
The Project will generally consist of the following components, as shown indicatively in Figure 2 overleaf:

- Eighty turbine positions, including a 25-metre diameter base construction area and an adjacent 30 x 50 metre construction pad;
- The 5.5 metre wide turbine access tracks within the wind farm site including a network of 6-metre-wide underground 33 kV distribution cables that connect to the onsite substation;
- The 5.5 meter wide site entrance access track, which runs from Woorndoo-Streatham Road to the wind farm site;
- The equipment lay-down areas and site office in the western part of the site (200 x 200 metres);
- Temporary concrete batching plant (200 x 100 metres);
- Two proposed on-site quarry sites;
- On-site electrical substation (100 x 100 metres).

The wind farm will be connected to the National Electricity Market via a 38km 220kV transmission line, and offsite substation, to the Mortlake Power Substation (MOPS). This infrastructure has been approved under a separate planning permits, and will be subject to a separate Environmental Management Plan.

Project figures are located in Appendix M and include the following:

- Figure 1: Public road upgrade extent
- Figure 2: General windfarm constraints
- Figure 3: Native vegetation and fauna habitat - Wind Farm
- Figure 4: Native Vegetation and Fauna Habitat - Public Road Upgrade
- Figure 5: Fauna habitat removal
- Figure 6: Native vegetation removal



- Wind Farm Layout**
- 80 Turbine Layout (24/07/2018)
 - Permanent Met Masts
 - Business Identification Signage
 - Firefighting Water Tank
 - Access Tracks
 - Underground Cabling
 - Substation
 - Operations and Maintenance Building
 - Main Compound
 - Temporary Laydown Area
 - Construction Compound
 - Batch Plant
 - Project Boundary
 - Main Access Track
 - Public Road Upgrade Extent

**APPROVED FOR THE
MINISTER FOR PLANNING**

SHEET 8 OF 301

Date: 20/09/2018
Version: A

Data Sources:
Turbines: WTG_80_PreConstruction_20180724.shp
Site Infrastructure: Zenvion,
20180608_80WTG_LAYOUT.DWG
Imagery: Google Earth Pro (Image copyright 2018 CNES /Airbus)
Base data: VicMap (Copyright © The State of Victoria,
Department of Environment, Land, Water & Planning 2017)

Scale: 1:45,000 at A3
GDA 1994 MGA Zone 54

Document Path: C:\GIS\Development_Sites\VIC\Dundonnell\Maps\working\DDWF_200_EMP_SiteLayoutPlan_A3L.mxd

Dundonnell Wind Farm
Figure 2: Indicative Site Layout Plan



2.2 Scope of Works

The scope of works for the Project includes the following key activities;

2.2.1 Construction

- **Site preparation:** this would involve creation of entrances from public roads, land clearance for compounds and laydown areas, establishment of construction compounds and establishment of on-site dams where required.
- **Site tracks:** this would involve land clearance and removal and stockpiling of topsoil for future use and re-topsoiling, excavation, filling, laying bedding materials and track surface materials.
- **Crane hardstands:** this would involve land clearance and topsoil removal, stockpiling at pad locations, excavation, filling and laying bedding and surface materials.
- **Foundations:** this would involve land clearance and removal and stockpiling of topsoil at foundation locations. Installation of steel reinforcement and pouring of concrete to form turbine gravity base. Curing of concrete and then backfilling and replacing topsoil to ground level.
- **Electrical works:** This would involve trenching of cable routes, laying bedding materials, cables and engineered backfill, replacement of top soil to ground level.
- **Collector substation and operations and maintenance buildings:** this would involve clearance of land, removal and storage of topsoil, excavation and pouring of building foundations and concrete pads at switch yard and transformer locations. Installation of electrical equipment and landscaping.
- **Turbines:** this would involve delivery of turbine components to site, installation of turbines at each location involving placement of tower sections on foundations followed by the nacelle, hub and blade assembly.
- **Commissioning:** this would involve testing of all electrical and mechanical systems from each turbine through the reticulation system to the terminal station to the metering and connection point. Connecting to the existing 220kV transmission line. Completion of the operations and maintenance buildings.
- **Finishing:** this would involve removal of temporary structures, plant and equipment. Site cleanup, re topsoiling and revegetation (where required).
- **Concrete batching:** a batching plant would be established to produce the concrete required for construction.
- **Transportation:** the construction activities described above would involve transport to site, including for materials, turbine components and plant and equipment. It is expected that site personnel would also commute to and from the wind farm site.

2.2.2 Construction hours of Work

The following hours of work will comply with those in the EPA Noise Control Guidelines, Construction and Demolition Site Noise: 1254, October 2008.

Normal daytime

- 7:00am to 6:00 pm Monday to Fridays
- 7:00am to 1:00pm Saturdays

Significant noise generating works will be managed to occur within daytime (standard/normal work hours) specified above however it is reiterated that a limited amount of works outside the standard hours will occur depending on logistical and safety requirements imposed by relevant consent or regulatory authorities.

Refer to the Noise Management Plan for further procedures on controlling and mitigating noise nuisance to neighbouring residences.

2.2.3 Operational Activities

Operation and maintenance of the wind farm facilities would include activities such as service and repair of turbines, regrading of access tracks, maintenance of the electrical reticulation system and buildings and plant, including control systems.

The 220kV transmission line connection to the 500kV Heywood-Moorabool substation network will be maintained by a TNSP.

Day to day monitoring and maintenance of the systems and wind farm facilities would be carried out by staff located on site with some monitoring being carried out remotely.

2.2.4 Decommissioning activities

Generally, activities associated with the decommissioning phase of the Project will be the same or very similar to those undertaken during construction. As such, where this Plan (and sub-plans) refer to specific 'construction' management measures this also applies to decommissioning phase of the project.

However, it is also noted that the decommissioning phase of the project is unlikely to occur for a minimum of 25 years from the commencement of operation. Therefore, prior to the commencement of the decommissioning phase as part of the EMP review process (see Section 7) the Plan will be reviewed and updated to reflect the appropriate environmental management standards and techniques of the time.

Furthermore, Condition 72 of the Planning Permit sets out specific decommissioning requirements when any or all turbines have permanently ceased to generate electricity, including:

- Notification of the Owner and Council in writing of the turbine(s) ceasing operation. Such notification must be given no later than two months after the turbine(s) ceases operation;
- Undertake the following to the satisfaction of the Council, within 6 months of providing written notification (or a timeframe otherwise agreed by the Parties):
 - Remove all above ground non-operational equipment;
 - Remove and clean up any residual contamination;
 - Rehabilitate all storage area, construction areas, access tracks and other areas affected by the decommissioning of the turbine(s), if those areas are not otherwise useful to the on-going use or decommissioning of the wind energy facility, or unless agreed otherwise by Council;
 - Submit a decommissioning traffic management plan to the same level of detailed as required by Condition 31 of the Planning Permit to the satisfaction of VicRoads and Council and, when approved, implement that plan; and
 - Submit a post-decommissioning revegetation management plan, including a timetable of works, to the Council and, when approved by the Council, implement that plan.

These requirements are required to be included in an agreement with the Proponent, owner of the land and Council pursuant to Section 173 of the Planning and Environment Act 1987. The review and update of the EMP prior to the decommissioning phase of the project will consider the requirements set out in the final Section 173 agreements.

3 Legislation and Statutory Requirements

3.1 Planning Permit Conditions

The Planning Permit for the DDWF was issued by the Minister for Planning under the Moyne Shire Planning Scheme for the construction and operation of the wind farm and associated infrastructure as well as the removal of native vegetation.

The Planning Permit requires that the EMP be developed in accordance with the structure and measures outlined in Chapter 25 of the Dundonnell Wind Farm EES (June 2015), prepared in consultation with specified authorities, and be in accordance with all relevant EPA requirements and guidelines.

The general requirements for the EMP and its associated Sub-Plans that are specified in Planning Permit conditions are presented in Table 1 below.

Table 1 – Planning Permit Condition 38 EMP general requirements

Condition	Requirements	Plan Section(s)
ENVIRONMENTAL MANAGEMENT PLAN		
General requirement for an environmental management plan		
38.	Before the development starts, an environmental management plan must be prepared, to the satisfaction of the responsible authority. When approved, the environmental management plan will be endorsed by the responsible authority and will then form part of this permit. Once endorsed the proponent must publish the plan on their website. The environmental plan:	This document
38 a)	Must be generally in accordance with Chapter 25 of the Dundonnell Wind Farm EES (June 2015).	This document and all Sub Plans
38 b)	Must be prepared in consultation with the agencies specified in conditions 43, 44, 46 and 47 or any other agency as directed by the responsible authority.	3.2.4 Liaison with Key Stakeholders
38 c)	May be prepared in sections or stages.	N/A
38 d)	Must be in accordance with all relevant EPA requirements and guidelines.	3.2.1, 3.2.2
38 e)	Must provide for, prior to the relevant construction activities, the clear demarcation on the ground of any areas to be avoided and not disturbed on the advice of a suitably qualified ecologist(s).	Appendix H
38 f)	Must meet the requirements of conditions 40 to 49 below.	-
40	Construction and Work Site Management Plan	Appendix B
41	Construction Noise Management Plan	Appendix C
42	Sediment, erosion and water quality management plan	Appendix D
43	Hydrocarbon and hazardous substances plan	Appendix E
44	Fire prevention and emergency response plan	Appendix F
45	Blasting Management Plan	Appendix G
46	Vegetation Management plan	Appendix H
47	Biosecurity management plan	Appendix I
48	Environmental management plan training program	9.1, 9.2, 9.3, Error! Reference source not found.
49	Environmental management plan reporting program	6
50	Implementation Timetable	Appendix A

Condition	Requirements	Plan Section(s)
51	Review of the environmental management plan	Section 7
59	Fauna Management Plan	Appendix J

3.2 Policy and statutory context

3.2.1 Legislative and other requirements

The key Victorian and Commonwealth legislation, policies and guidelines that are relevant to the construction and operational phases of the project are listed in Table 3. The project will adhere to all relevant legislation, and will ensure policies and guidelines are referenced to help guide best practice on site during construction and operation activities. All works will be in accordance with relevant EPA requirements and guidelines.

Table 2 - Legislation, policies and guidelines

Topic	Legislation, policies and guidelines	Application to project
Air Quality	<p><u>State Legislation</u></p> <p><i>Environment Protection Act 1970</i></p> <p><i>Health Act 1958</i></p> <p><u>Guidelines/Best Practice/Policies</u></p> <p>State Environment Protection Policy (SEPP) (Air Quality Management) 2001</p> <p>SEPP (Ambient Air Quality) 2016</p> <p>Variations to SEPP (Air Quality Management) and State Environment Protection Policy (Ambient Air Quality) - Policy Impact Assessment. Publication 826</p> <p>Environment Protection (Vehicle emissions) Regulations. EPA Publication 877</p> <p>EPA Publication 829: Protocol for Environmental Management 'Minimum Control Requirements for Stationary Sources (2002)'</p>	Potential emissions from vehicles and plant, dust, and concrete batching activities.
Concrete batching	<p><u>State Legislation</u></p> <p><i>Environment Protection Act 1970</i></p> <p><u>Guidelines/Best Practice/Policies</u></p> <p>EPA Publication 628: Environmental Guidelines for the Concrete Batching Industry (1998)</p> <p>EPA Publication 829: Protocol for Environmental Management 'Minimum Control Requirements for Stationary Sources (2002)'</p>	Potential impacts to surface water resulting from batch plant activities and surface runoff.
Contamination and Hazardous Materials	<p><u>State Legislation</u></p> <p><i>Environment Protection Act 1970</i></p> <p><i>Environment Protection (Industrial Waste Resource) Regulations 2009</i></p> <p><i>Dangerous Goods Act 1985</i></p> <p><i>Occupational Health and Safety Act 2004</i></p> <p><u>Guidelines/Best Practice/Policies</u></p>	Potential impacts to surface water, groundwater and soil contamination resulting from spills during transport,

Topic	Legislation, policies and guidelines	Application to project
	<p>DELWP (2016) Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria</p> <p>EPA Victoria (1991a) Best Practice Environmental Management Series: Construction Techniques for Sediment Pollution Control. Publication Number 275</p> <p>EPA Victoria (1996a) Environmental Guidelines for Major Construction Sites. Publication Number 480</p> <p>National Road Transport Commission (1998) Australian Dangerous Goods Code 6th Edition</p> <p>EPA Victoria (1996b) Bunding Guidelines, Publication 347</p> <p>SEPP (Groundwaters of Victoria) 1997</p> <p>SEPP (Prevention and Management of Contaminated Land) 2002</p> <p>EPA Victoria (2009a) Industrial Waste Resource Guidelines – Soil hazard classification and management</p> <p>EPA Victoria (2009b) Industrial Waste Resource Guidelines – Soil Sampling</p> <p>Dangerous Goods (Storage and Handling) Regulations 2012</p> <p>Occupational Health and Safety (Hazardous Substances) Regulations 199</p> <p>Australian Standard 1216: Class labels for dangerous goods (2006)</p> <p>Australian Standard 1940: The Storage and Handling of Flammable and Combustible Liquids (2004)</p> <p>Australian Code for the Transport of Dangerous Goods by Road and Rail (2015)</p>	<p>storage or handling of hazardous substances.</p>
Erosion and sediment	<p><u>State Legislation</u></p> <p><i>Environment Protection Act 1970</i></p> <p><i>Water Act 1989</i></p> <p><i>Catchment and Land Protection Act 1994</i></p> <p><i>Planning and Environment Act 1987</i></p> <p><u>Guidelines/Best Practice/Policies</u></p> <p>State Environment Protection Policy (Waters of Victoria) 2004</p> <p>EPA Publication 480: Environmental Guidelines for Major Construction Sites (1996)</p> <p>Publication 275: Construction Techniques for Sediment Pollution Control (1991)</p> <p>EPA Publication 628: Environmental Guidelines for the Concrete Batching Industry (1998)</p>	<p>Potential impacts to surface water resulting from soil erosion.</p>
Fire Prevention and Protection	<p><u>State Legislation</u></p> <p><i>Occupational Health and Safety Act 2004</i></p> <p><i>Dangerous Goods Act 1985</i></p> <p><i>Dangerous Goods (Storage and Handling) Regulations 2000</i></p>	<p>Prevention and response to building and wildfires.</p>

Topic	Legislation, policies and guidelines	Application to project
	<p><i>Electricity Safety (Bushfire Mitigation) Regulations 2003</i></p> <p><u>Guidelines/Best Practice/Policies</u></p> <p>Emergency Management Guidelines for Wind Energy Facilities (CFA, 2012)</p> <p>Victorian Planning Provisions Bushfire Management Overlay – Fire Safety Guideline Land Use Planning 002.</p>	
Flora and Fauna (including weed prevention)	<p><u>Commonwealth Legislation</u></p> <p><i>Environment Protection and Biodiversity Conservation Act 1999</i></p> <p><u>State Legislation</u></p> <p><i>Catchment and Land Protection Act 1994</i></p> <p><i>Fisheries Act 1995</i></p> <p><i>Flora and Fauna Guarantee Act 1988</i></p> <p><i>Planning and Environment Act 1987</i></p> <p><i>Wildlife Act 1975</i></p> <p><i>Conservation, Forests and Land Act 1987</i></p> <p><u>Guidelines/Best Practice/Policies</u></p> <p>Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (DELWP, 2016)</p> <p>Victoria’s Native Vegetation Management – A Framework for Action (Victorian Government, 2002a)</p> <p>Wimmera Regional Catchment Strategy 2013-2019 (Wimmera CMA, 2013)</p> <p>Victorian Pest Management - A framework for action (Victorian Government, 2002b)</p>	Potential impacts to flora and fauna resulting from harm to native vegetation, protected areas or through the introduction of weeds and pathogens.
Incident Management	<p><u>State Legislation</u></p> <p><i>Occupational Health and Safety Act 2004</i></p> <p><i>Planning and Environment Act 1987</i></p> <p><i>Environment Protection Act 1970</i></p> <p><u>Guidelines/Best Practice/Policies</u></p> <p>EPA Victoria (1996a) Environmental Guidelines for Major Construction Sites</p>	Effective response to potential environmental incident.
Natural ecosystems and biodiversity	<p><u>Commonwealth Legislation</u></p> <p><i>Environmental Protection and Biodiversity Conservation Act 1999</i></p> <p><u>State Legislation</u></p> <p><i>Flora and Fauna Guarantee Act 1988</i></p> <p><i>Wildlife Act 1975</i></p> <p><i>Planning and Environment Act 1987</i></p> <p><u>Guidelines/Best Practice/Policies</u></p> <p>The Convention on Biological Diversity (1992)</p>	Potential impacts to flora and fauna.

Topic	Legislation, policies and guidelines	Application to project
	<p>Australia's Biodiversity Conservation Strategy (2010)</p> <p>Protecting Victoria's Environment – Biodiversity 2037 (2017)</p> <p>Victorian Native Vegetation Management - A Framework for Action (2011)</p> <p>Australian Natural Heritage Charter (2002)</p>	
Noise and Vibration	<p><u>State Legislation</u></p> <p><i>Environment Protection Act 1970</i></p> <p><i>Health Act 1958</i></p> <p><i>Occupational Health and Safety Act 2004</i></p> <p><i>Transport Act 1983</i></p> <p><i>Planning and Environment Act 1987</i></p> <p><u>Guidelines/Best Practice/Policies</u></p> <p>Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (DELWP, 2016)</p> <p>EPA Victoria (2008) Noise Control Guidelines, Publication TG 302/92</p> <p>EPA Victoria (1996a) Environmental Guidelines for Major Construction Sites, Publication No. 480</p> <p>EPA Victoria State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade). Publication 822.</p> <p>Australian Standard 2346 Guide to Noise Control on Construction, Maintenance and Demolition Sites (1991)</p> <p>EPA Victoria (1991b) Information Bulletin: A guide to the measurement and analysis of noise. Publication number 280</p> <p>EPA Victoria (2004) Doing it right on subdivisions. Temporary environmental protection measures for subdivision construction sites. Publication number 960</p>	<p>Potential impacts resulting from construction noise emissions from plant and machinery</p>
Soil	<p><u>State Legislation</u></p> <p><i>Environment Protection Act 1970</i></p> <p><i>Environment Protection (Prescribed Waste) Regulations 1998</i></p> <p><i>Catchment and Land Protection Act 1994</i></p> <p><u>Guidelines/Best Practice/Policies</u></p> <p>EPA Victoria (1996b) Bunding Guidelines, Publication Number 347</p> <p>EPA Victoria (1996a) Environmental Guidelines for Major Construction Sites, Publication No. 480</p> <p>EPA Victoria (2004) Doing it right on subdivisions. Temporary environmental protection measures for subdivision construction sites. Publication number 960</p>	<p>Potential soil contamination resulting from accidental release of hazardous or contaminating substances.</p>
Waste	<p><u>State Legislation</u></p> <p><i>Environment Protection Act 1970</i></p>	<p>Use or resources and</p>

Topic	Legislation, policies and guidelines	Application to project
	<p><i>Environment Protection (Industrial Waste Resource) Regulations 2009</i></p> <p><i>Environment Protection (Resource Efficiency) Act 2002</i></p> <p><i>Health Act 1958</i></p> <p><u>Guidelines/Best Practice/Policies</u></p> <p>Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (DELWP, 2016)</p> <p>EPA Victoria (1994) Bulletin No. 344, The Transport and Disposal of Empty Drums containing Hazardous Compounds</p> <p>EPA Victoria (2016) IWRG822, Waste Codes</p> <p>EPA Victoria (2001) Bulletin No. 423b, List of Treatment and Disposal Facilities for Prescribed Waste</p> <p>EPA Victoria (2013) Industrial Waste Resource Guidelines – Waste Transport Certificates</p> <p>EPA Victoria (1999) Publication 395a Instruction for Completion of Waste Transport Certificates</p> <p>EPA Victoria (2004) Doing it right on subdivisions. Temporary environmental protection measures for subdivision construction sites. Publication number 960</p>	<p>reduction of landfill capacity.</p>
<p>Water</p>	<p><u>State Legislation</u></p> <p><i>Environment Protection Act 1970</i></p> <p><i>Litter Act 1987</i></p> <p><i>Planning and Environment Act 1987</i></p> <p><i>Water Act 1989</i></p> <p><i>Water Industry Act 1994</i></p> <p><i>Catchment & Land Protection Act 1994</i></p> <p><u>Guidelines/Best Practice/Policies</u></p> <p>Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (2016)</p> <p>EPA Publication 480: Victoria (1996a) Environmental Guidelines for Major Construction Sites,</p> <p>Environment Protection Authority (2004) Doing it right on subdivisions. Temporary environmental protection measures for subdivision construction sites. Publication number 960</p> <p>State Environmental Protection Policy (Groundwaters of Victoria) 1997</p> <p>State Environmental Protection Policy (Waters of Victoria) 2004</p> <p>Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC/ARMCANZ, 2000</p> <p>EPA Publication 275: Construction Techniques for Sediment Pollution Control (1991)</p> <p>EPA Publication 347.1: Bunding Guidelines (2015)</p>	<p>Consumption of water from potable or natural sources, and management of wastewater.</p>

Topic	Legislation, policies and guidelines	Application to project
	EPA Publication 891.4: Code of Practice – Onsite Wastewater Management (2016) <u>Glenelg Hopkins Regional Catchment Strategy 2013 - 2019</u>	
Traffic	<u>State Legislation</u> <i>Road Management Act 2004</i> <u>Guidelines/Best Practice/Policies</u> Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (DELWP, 2016)	

3.2.2 Statutory Approvals and Permits

In addition to Planning Permit, the key environmental approval/permit requirements are outlined in Table 3.

Table 3 - Environmental approvals and permits

Environmental Aspect	Statutory Authority	Approval/Permit Required
Contaminated Materials and Waste	EPA Victoria	EPA licensed vehicles required for waste and contaminated material removal (including weed infested material).
Fire	CFA	During the Fire Danger Season for hot-works (on Total fire ban days).
Noise and Vibration	EPA Victoria	No formal approval required.
Native vegetation	Department of Environment, Land, Water and Planning (DELWP) MSC	Permit required for the removal of native vegetation. Permit required for the removal of protected flora under the <i>Flora and Fauna Guarantee Act 1988</i> (Vic).
Native Fauna	DELWP	Protected native fauna on-site requiring translocation will require a permit under the <i>Wildlife Act 1975</i> (Vic).
Aboriginal and Historical Cultural Heritage	Aboriginal Affairs Victoria Registered Aboriginal Party Kuuyang Maar Aboriginal Corporation Eastern Maar Aboriginal Corporation Moyne Shire Council	CHMP, prepared and approved dated (23 February 2016) under S49 of the Aboriginal Heritage Act (Vic) A permit will be required from Moyne Shire Council pursuant to Clause 52.37 (Moyne Shire Planning Scheme) for impact to any 'Dry-Stone Walls', except for the purposes of installing a gate.
Water Quality	Glenelg Hopkins CMA	Permit required for activities affecting a watercourse. Permit for release of water and/or works on waterways/stormwater systems.

Environmental Aspect	Statutory Authority	Approval/Permit Required
Air Quality	EPA Victoria	No Permit required.
Hazardous Materials and Storage	EPA Victoria	No permit required for volumes stored for this project.

Copies of all project approvals, licenses and permits are to be kept on site in an Approvals Register that will be updated as required.

3.2.3 Relevant Compliance Standards

All relevant policies and Australian Standards including, ISO14001:2015 Environmental Management Systems, will be followed for the Project. Other relevant compliance standards such as standards relevant to blasting, bunding, spill management and management of stormwater are discussed within the Sub-Plans included in this EMP.

3.2.4 Liaison with Key Stakeholders

The key stakeholders for the environmental aspects of the Project are State and Local Government departments as well as other statutory authorities that are primarily responsible for issuing relevant environmental approvals and permits. Liaison with these stakeholders at each stage of the Project is critical to ensure that all relevant legislative and statutory requirements are met.

The Environmental Representative and relevant members of the Project team shall liaise with these key stakeholders throughout each phase of the Project to ensure stakeholder requirements have been communicated and understood. The Projects key stakeholders are outlined below.

Institutional stakeholders in the Project include:

- Department of Environment Land Water and Planning (DELWP);
- Department of Economic Development, Jobs, Transport and Resources (DEDJTR);
- EPA Victoria;
- Glenelg Hopkins Catchment Management Authority;
- Moyne Shire Council;
- Civil Aviation Safety Authority (CASA);
- VicRoads; and
- Country Fire Authority (CFA).

Interested parties include but are not limited to:

- Local Federal and State Members of Parliament, and
- Local government council members

Table 4 provides a summary of agency consultation in the preparation of the development and management plans as required by their respective permit conditions.

Table 4 – Summary of consultation

Documentation	Relevant condition	Authorities consulted in preparation	Form of consultation	Version reviewed ¹
Environmental Management Plan (Main Document)	38, 48, 49, 50	-	Email correspondence requesting review. Group agency meeting held July 5 2018.	Revision E, dated 21/06/2018
Appendix B – Construction and Work Site Management Plan	40	-	As above.	Revision D, dated 20/06/2018
Appendix C – Construction Noise Management Plan	41	-	As above.	Revision A, dated 25/06/2018
Appendix D – Sediment, Erosion and Water Quality Management Plan	42	Glenelg Hopkins CMA	As above. Meeting / phone conference.	Revision D, dated 20/06/2018
Appendix E – Hydrocarbon and Hazardous Substances Management Plan	43	-	As above.	Revision D, dated 20/06/2018
Appendix F – Fire Prevention and Emergency Response Plan	44	CFA Council ²	As above.	Revision A, dated 25/06/2018
Appendix G – Blasting Management Plan	45	-	As above.	Revision D, dated 20/06/2018

4 Environmental Impact Assessment

4.1 Key Environmental Issues

There are a number of important environmental constraints identified on the Dundonnell Wind Farm project, The following key aspects and potential impacts have been identified and are addressed in this EMP:

- Protection of flora and fauna (refer to Vegetation Management Plan and Fauna Management Plan for further detail) ;
- Protection of soil and water quality (refer to Sediment, Erosion and Water Quality Management Plan for further detail);
- Management of pest plants and pathogens (refer to Biosecurity Management Plan for further detail);
- Control of noise and vibration (refer to Construction Noise Management Plan for further detail);

¹ Agencies were consulted on the response to comments on this version of the document through verbal and email correspondence. Furthermore, DELWP Environment reviewed Revision F of the EMP dated 26/09/2019.

² Moyne Shire also provided comments on the Main Document, Appendix D, Appendix H, and Appendix I (in addition to comments on Appendix F)

- Avoidance of bushfire (refer to Fire Prevention and Emergency Response Plan for further detail);
- Storage and handling of hydrocarbons and hazardous substances (Refer to Hydrocarbon and Hazardous Substances Management Plan, and Construction Work Site Management Plan for further detail);
- Waste and sanitary facility management (refer to Construction Work Site Management Plan for further detail);
- Historic dry stone walls (refer to Construction Work Site Management Plan for further detail) and
- Avoidance of harm caused by blasting (refer to Blasting Management Plan for further detail).

Environmental constraints are factored into the detailed design of all project infrastructure including, but not limited to, hardstands, access tracks, turbine footings, and compound/site facilities. All avoidance areas (as shown in the endorsed plans) are overlaid into the engineering design software and avoided where required, or areas calculated to ensure native vegetation clearing limits are not exceeded. Environmental constraints will be clearly marked on relevant engineering drawings that are issued for construction. Issued for construction drawings are controlled in accordance with the Contractors quality management systems and are the primary medium for setting out and ensuring construction is in accordance with the design and in turn the constraints. Relevant for construction drawings will be provided to DELWP Environment.

This plan should be read in conjunction with the following:

- Cultural Heritage Management Plan (12393), and
- Traffic Management Plan produced in compliance with condition 30 of the Planning Permit.

5 Environmental Management and Mitigation

The EMP comprises an overarching document (this document) and a series of Sub-Plans. The Sub-Plans identify environmental management measures that are specific to the key environmental issues in Section 4.1 above. Specific procedures and mitigation measures are referenced in the EMP and Sub-Plans where appropriate.

5.1 Construction and Work Site Management Plan

A Construction and Work Site Management Plan has been prepared to meet the requirements of Condition 40 (a-l) of the Planning Permit No.2015/2858.

The purpose of this plan is to outline how construction works will be managed to minimise pollution and other potential environmental impacts. It's objective is to provide guidance on environmental protection measures to be implemented on works undertaken within the work areas during construction, and it addresses several key issues including:

- Risk of injury to native fauna, domestic stock, native vegetation and heritage values during the development of the wind farm
- Risk of injury, illness or nuisance to personnel working on site and members of the public, and visitors to the site during construction

5.2 Construction Noise Management Plan

A Construction Noise Management Plan has been prepared to meet the requirements of Condition 41 (a-c) of the Planning Permit.

The purpose of the Plan is to present a set of project-specific construction noise mitigation and management measures, and monitoring safeguards/provisions that are suitable to the potential magnitude and extent of noise impacts associated with the wind farm.

5.3 The objective of the Plan is to reduce noise levels and minimise impacts as far as is feasible and reasonable, and practical to implement. Sediment, Erosion and Water Quality Management Plan

A Sediment, Erosion and Water Quality Management Plan has been prepared to meet the requirements of Condition 42 (a-l) of the Planning Permit.

This Plan has been developed with the objective of providing a framework of requirements for sediment and control guidelines to be employed during and after construction.

- A number of key issues are addressed in the Plan including:
- Uncontrolled development and operational activities that could lead to water or land contamination, erosion or sedimentation.
- Potential soil loss during the construction of access tracks and stockpiling.
- Potential erosion and sedimentation of waterways resulting from temporary flooding and road wash out at waterways crossings during a storm events.

5.4 Hydrocarbon and Hazardous Substances Plan

A Hydrocarbon and Hazardous Substances Management Plan has been prepared to meet the requirements of Condition 43 (a-b) of the Planning Permit.

The purpose of the Plan is to define the management of hazardous materials throughout the construction phase. Its objective is to provide practical procedures for storing and handling hazardous material and substances on site during construction and operations.

The Plan address a number of key issues relating to hydrocarbon and hazardous substances including:

- Protecting community amenity and site personnel from the use of hazardous materials
- Protecting beneficial uses of air, land, water, human and environmental health, from the impacts of hazardous materials.
- Identification of hazardous materials, handling and storing hazardous materials
- Design criteria for hazardous materials storage facilities
- Spills monitoring and reporting

5.5 Fire Prevention and Emergency Response Plan

A Fire Prevention and Emergency Response Plan has been prepared to meet the requirements of Condition 44 (a-g) of the Planning Permit.

The purpose of the Plan is to define minimum requirements to prevent and control fires associated with construction and operation activities and to provide guidance in relation to emergency response in the event of a fire to mitigate the impact on people, the environment and assets.

The Plan provides an overview of key legislation and guidelines relevant to fire prevention and emergency response. It also establishes a methodology of risk assessment, analysis and evaluation of fire hazards throughout the various project phases. Rescue and evacuation procedures are also established.

5.6 Blasting Management Plan

A Blasting Management Plan has been prepared to meet the requirements of Condition 45 (a-h) of the Planning Permit.

The Plan applies to the construction phase of the project and its aim is to ensure that any blasts that occur during the project do not harm people in the area and limit any damage to the environment to the lowest reasonably possible.

The objectives of the Plan are to provide guidance for the preparation of task specific blasting plans, and ensure a safe and risk controlled plan for explosive blasting is in place.

The Plan address a number of key issues relating to blasting activities including:

- Identifying the location of blasts relevant to sensitive receptors in the surrounding area.
- Management of over blast, which if unmanaged can impact on surrounding areas.
- Managing potential impacts to groundwater and surface water recharge from drill and blasting, if not managed correctly.

5.7 Vegetation Management Plan

A Vegetation Management Plan has been prepared to meet the requirements of Condition 46 (a-d) of the Planning Permit.

The objective of this Plan is to provide management and mitigation measures to avoid and minimise potential impacts on areas of native vegetation to be retained and fauna habitat.

5.8 The location and extent of native vegetation to be removed is shown on the endorsed Native Vegetation Removal Plans, under Condition 1 of Planning Permit No. 2015/23858), as well as EMP Appendix M Figure 6 Native Vegetation Removal. Any changes to vegetation removal areas will require further onsite inspection and assessment by a suitably qualified ecologist. The Vegetation Management Plan outlines existing vegetation within the DDWF and areas where vegetation is proposed to be removed and retained. It also provides management and mitigation measures to protect native vegetation during the construction phase of the DDWF, clear demarcation on the ground of areas to be avoided, and established protocols of inadvertent loss or disturbance of key habitat areas of the Striped Legless Lizard, the Fat-tailed Dunnart, the Growling Grass Frog, the Corangamite Water Skink and the Golden Sun Moth. Biosecurity Management Plan

A Biosecurity Management Plan has been prepared to meet the requirements of Condition 47 (a-c) of the Planning Permit.

The objective of the Plan is to identify, prevent and manage the risk of diseases, weeds and pest animals entering, establishing or spreading within or beyond the DDWF during the construction phase of the DDWF.

The Plan identifies existing biosecurity risks onsite including weeds, pest animals and pathogens. Procedures are outlined to prevent biosecurity risk including decontamination protocols and managing the importation of material. It also outlines a protocol of identification and management of ongoing biosecurity risks onsite including monitoring, identification, reporting, and control measures.

5.9 Fauna Management Plan

A Fauna Management Plan has been prepared to meet the requirements of Condition 59 (a, b, and d) of the Planning Permit.

The objective of this plan is to provide management and mitigation measures to avoid and minimise potential impacts on significant fauna, including: Striped Legless Lizard, Fat-tailed Dunnart, Growling Grass Frog, Corangamite Water Skink and Golden Sun Moth.

The Plan outlines existing significant fauna values onsite, including habitat assessments, and management measures to minimise harm to significant fauna, including clear demarcation of any habitat areas.

The Plan includes a Striped Legless Lizard and Fat-Tailed Dunnart Salvage and Translocation Protocol to meet the requirements of Condition 59 (c) of the Planning Permit.

The objective of the Protocol is to avoid and reduce impacts to Striped Legless Lizard and Fat-Tailed Dunnart during construction.

The Plan describes the key habitat areas of these species, including reference to previous surveys, and outlines salvage requirements where animal handling is required. Procedures are also nominated to assist with detection, management of open trenches, and management of habitat.

5.10 Managing Constraints Through Detailed Design

Environmental constraints are factored into the detailed design of all project infrastructure including, but not limited to, hardstands, access tracks, turbine footings, and compound/site facilities. All avoidance areas (as shown in the endorsed plans) are overlaid into the engineering design software and avoided where required, or areas calculated to ensure native vegetation clearing limits are not exceeded.

Environmental constraints will be clearly marked on all engineering drawings that are issued for construction. Issued for construction drawings are controlled in accordance with the Contractors Quality Management Systems and are the primary medium for setting out and ensuring construction is in accordance with the design and the constraints. These will be provided to DELWP.

5.11 Environmental Management Framework

The environmental management process is outlined in Figure 3. It describes the interaction of the various environmental plans and procedures. Responsibility for their development and management is outlined in Section 8.

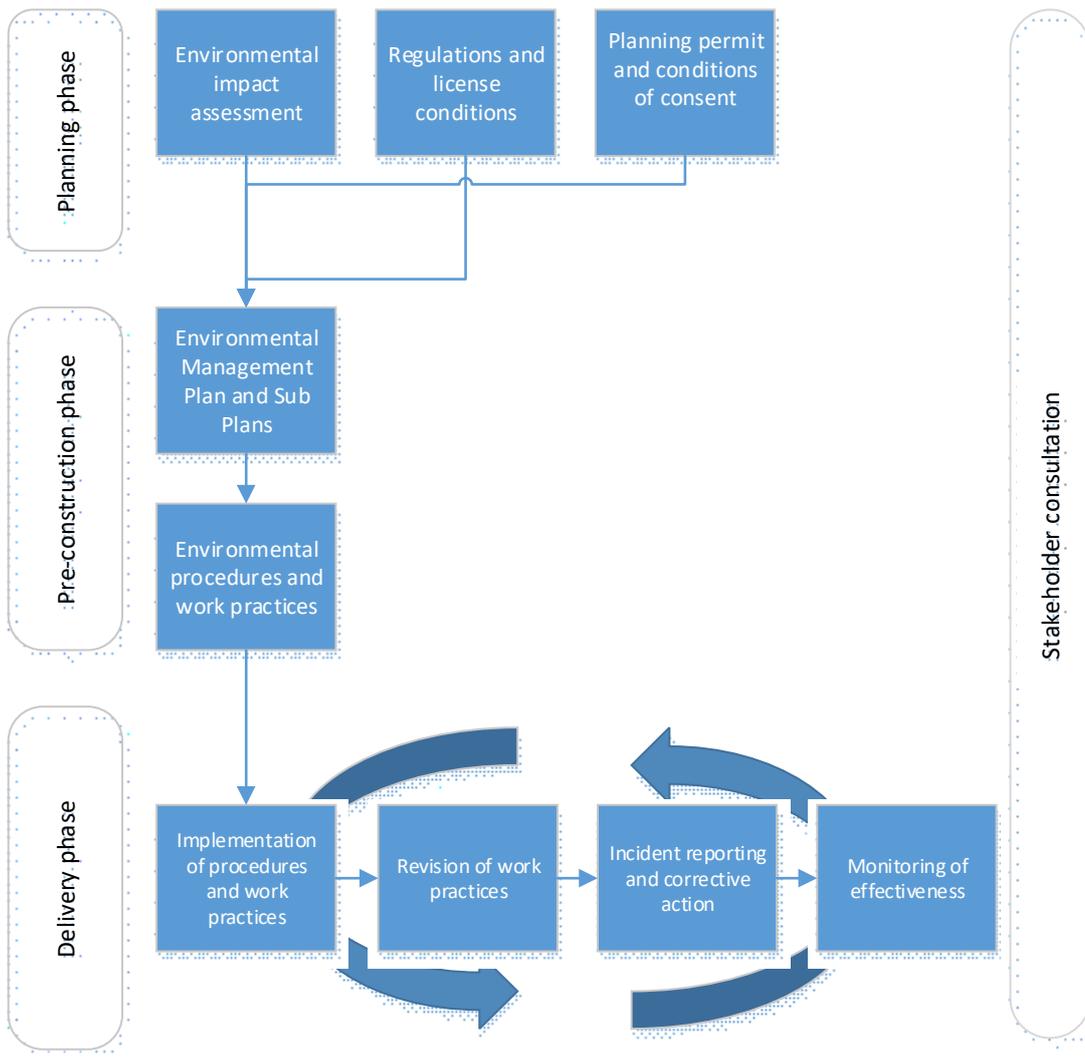


Figure 3 - Environmental Management Process

5.12 Implementation timetable

In compliance with condition 50 of the Planning Permit the Sub-Plans contained in Appendix B-L, a timetable of when key aspects of the EMP and its Subplans will be undertaken (in the context of three major phases of development: pre-construction, construction and operational phases) is provided in Appendix A. Each implementation phase is described below:

- Pre-construction – Primarily consisting of site preparation and surveys.
- Construction – Primarily consisting of deliveries, internal access road construction, over-size deliveries, WTG installation, electrical works, and construction site rehabilitation.
- Operations – Commissioning of the wind farm site and operation.

5.13 Environmental Obligations Register

An Environmental Obligations Register will be developed prior to construction commencing and maintained by the Environmental Representative as an electronic database to track environmental requirements, safeguards, project commitments and monitoring requirements, to help demonstrate compliance to MSC and relevant government agencies. The Register will include as a minimum:

- Relevant legislation
- State, regional and local policies
- Industry standards and guidelines
- EES commitments
- Planning and environmental conditions of approval
- Timeframes for implementation
- Roles and responsibilities against each task

6 Monitoring and Reporting

A systematic monitoring and measuring process involving inspection and testing fulfils a threefold purpose to:

- Ensures conformity to contractual requirements;
- Ensures environmental performance complies with legislative requirements and is in accordance with Project requirements; and
- Provides an ongoing risk management process and early warnings of hazards.

Environmental monitoring and reporting process on this Project shall include:

- Monitoring
- Inspections
- Auditing
- Reporting.

Project team personnel including the Environmental Representative, Site/Project Engineers, Foremen and Site Supervisors are responsible for undertaking daily monitoring of the Project as well as being involved in formal environmental inspections.

The Environmental Representative shall review sustainability and environmental monitoring results, non-compliance and corrective and preventative actions as they are produced/occur.

Any results outside of relevant limits/targets shall be reported immediately to the Project Manager, who shall take appropriate action and advise appropriate personnel and authorities.

Any environmental incidents will be assessed and included on a register which will track the incident from initial reporting through to completion.

6.1 Internal inspections/monitoring

An Environmental Inspection Checklist (refer to Appendix K) will be completed weekly by the Environmental Representative for documenting site inspections for the purpose of verifying compliance with the EMP and Subplans, licences, permits and approvals.

The following Subplans provide additional monitoring requirements, which will be adhered to:

- Construction Noise Management Plan
- Sediment, Erosion and Water Quality Management Plan
- Hydrocarbon and Hazardous Substances Plan
- Blasting Management Plan
- Vegetation Management plan
- Biosecurity Management Plan

- Fauna Management Plan

Additional monitoring may also be required under specific work packages.

Where inspection by the Environmental Representative or delegate determines that measures are not effective the Project will implement corrective and preventative measures.

In addition to monitoring by the Environmental Representative, the Site/Project Engineers, Foremen and Site Supervisors shall undertake daily informal site inspections during the works as part of regular monitoring, which shall include environmental issues. Any non-conformances detected during inspections, or if any rectification or maintenance is required or carried out, this shall then be documented and significant issues reported in a timely manner to the Environmental Representative or Site Engineer.

In addition, joint site inspections with key stakeholders (e.g. EPA Victoria, DELWP, RAP, CMA) may be arranged during construction, as required.

6.2 Reporting

The Environmental Representative is responsible for reporting on the environmental performance of the Project.

The frequency of the following reports will have reviewed following completion of construction.

6.2.1 Weekly Environmental Reports

The Environmental Representative shall record environmental inspections on the Environmental Inspection Form (refer to Appendix K) and report any environmental observations, trends, observations, improvements, requests, correction and upcoming events and activities.

6.2.2 Monthly Environmental Reports

A written environmental report each month shall be compiled by the Environmental Representative and included in the Project monthly reporting containing information such as:

- A status of environmental activities such as monitoring and surveillance of controls, inspections, testing and incidents associated with the work during the preceding month;
- Environmental good news stories;
- Complaints, infringements and penalties incurred;
- All environmental incidents;
- Status of environment document preparation/approval;
- Status of all non-conformances, detailing preventative actions take to prevent reoccurrence of those incidents/non-conformances;
- The results of environment reviews and audits (internal and external) undertaken during the preceding month.

6.3 Auditing

6.3.1 Internal Auditing

Internal audits will be completed within the first three months of start-up and thereafter every six months (as a minimum). An audit report register shall be developed and maintained by the Contractor. Internal environmental audits shall include:

- Internal audits to ensure implementation of the Project environmental processes, and
- Regular surveillance during the construction phase and ensure independent 6 monthly audits.

Results of the audit shall be documented and brought to the attention of the personnel having responsibility for the area audited and reported to the Project Manager within 5 working days of finalisation of the audit.

For any observations or non-compliances found, corrective actions shall be recorded in the Environmental Inspection Checklist and addressed in a timely manner.

6.3.2 External audits and inspections

External (independent) audits will be undertaken three months from the commencement of construction and then at twelve monthly intervals. All external audits will be undertaken in accordance with ISO 19011:2014 – Guidelines for Auditing Management Systems.

Results from external audits are to be reviewed by the Project Manager and any necessary corrective actions assigned to ensure appropriate and timely closeout.

6.4 Incident and Non-Conformity

An incident can be defined as an unwanted event which has an adverse effect on the environment. A non-conformance can be defined as a failure to undertake a task in the required manner. This may not lead to an incident, and if this is the case may be considered a near miss.

The manner in which tasks are required to be completed is detailed in various project plans, legislation and project quality systems.

All environmental incidents and non-conformances will be reported to the Environmental Representative using an incident notification form (refer to Appendix K) or through a digital event management software, and registered by the Contractor on an incident register, ensuring the following information is tracked:

- Event date
- Event description
- Immediate actions taken
- Event severity classification
- Actions to remediate or prevent reoccurrence, due date, and person responsible

The incident register must be completed by parties involved in the incident or non-conformance within 24 hours, once immediate required mitigation actions are completed.

This process must include an investigation or review of the incident to identify any further appropriate corrective actions required. Completed incident report forms must be signed by those documenting the report as well as by the Project Manager.

6.5 Statutory notification

Statutory notification will take place where there has been a non-compliance with legislation or approval conditions, or actual or potential harm to the health and safety of human being of the environment is considered significant.

6.6 Implement corrective actions

Corrective actions identified in any incident investigation and review should be implemented as soon as practicable and in accordance with the agreed timeframe by the responsible person.

6.7 Complaints

All complaints will be managed in accordance with the endorsed Dundonnell Wind Farm Complaints Management Plan (pursuant to Conditions 16, 17, 19 and 22 of the Planning Permit). Complaints from any source (e.g. public, government authorities) relating to the environment will be registered in a complaints handling register, and the complaint investigated by an appropriate staff member responded to within seven days. Actions will be taken to enable satisfactory closeout.

All complaints will be reported to the Environmental Representative. An environmental complaints register will be established and maintained by the Environmental Representative who will receive, log, track and

respond to complaints within 24 hours. In the case of an emergency, potential pollution/environmental incident or non-compliance, the complaint will be responded to immediately.

The following details will be recorded in the complaints handling register:

- Dundonnell Wind Farm allocated dwelling number (if relevant);
- Why the complaint is being made / details;
- When the complaint was first made (time and date);
- Method of contact;
- Who received the complaint;
- Complaint handling owner;
- Any particular personnel the complaint s about (if relevant);
- What action the complainant would like taken to see the matter put right;
- Date of response and immediate actions;
- Allocated complaints number shall be to each complaint; and
- Attach any copies of correspondence relating to the complaint.

Emergency complaints will be escalated in line with Tilt Renewables' Emergency Management Process.

6.8 Emergency Preparedness and Response

Emergency response procedures for significant environmental emergencies are included in the relevant individual sub plans.

Appropriate persons should be contacted as soon as practicable following detection of an incident. This includes but is not limited to those listed in Table 5.

Table 5 - Emergency Contact Details

Contact	Phone number
Police	000
Country Fire Authority	000
Ambulance	000
Moyne Shire Council	1300 656 564
EPA Victoria	1300 372 842
Wildlife Victoria	1300 094 535
DELWP	131 168
Catchment Management Authority	03 5382 1544

6.9 Document of Records

Project records, including pertinent Subcontractor records, shall be maintained to provide evidence of the effective operation of the environmental management system. Such records shall include, but are not limited to:

- Correspondence to/from interested parties;
- Permits, licenses and approvals;
- Induction, register and induction training records;

- Environmental incidents, non-conformances and complaints;
- Inspection reports, checklists, diary entries;
- Monitoring results;
- Cultural heritage activities;
- Waste measurement and tracking records;
- Internal and external inspections and audits; and
- Any other record identified within the EMP.

6.10 Control of Measuring and Testing Equipment

All inspection, measuring and testing equipment (including newly acquired test equipment) used for inspection and acceptance purposes shall be controlled, calibrated and maintained, as per the relevant manufacturer's specifications. This also includes such equipment used by Sub-contractors.

Measuring equipment for inspection and product conformance purposes shall be calibrated at prescribed intervals against certified equipment having a known relationship to nationally recognised standards. Any equipment identified as having doubtful accuracy or precision shall be removed from use and calibrated. Where any inspection, measuring and test equipment is found to be out of calibration, the validity of the previous inspection results shall be assessed and documented.

7 EMP Review

During construction this EMP will be reviewed annually and if necessary amended in consultation with the appropriate authorities. Any review will examine all performance objectives and mitigation measures to determine if they are still applicable to the site. Where required objectives and criteria will be altered to ensure greater relevance, this may involve reassigning responsibilities and altering procedures/monitoring requirements. If any of these changes are to likely impact the construction personnel or processes, personnel shall be informed of the relevant changes during a site-wide Toolbox Talk.

During the Operations phase this EMP must be reviewed and if necessary amended in consultation with the responsible authority and other authorities as directed by the responsible authority every five years, to reflect operational experience and changes in environmental management standards and techniques. Any changes to it shall be communicated to the Project team and maintained in a document control register.

Any amended plan shall be submitted to the responsible authority for re-endorsement. Once re-endorsed the amended plan shall supersede the earlier plan.

8 Roles and responsibilities

The Project must be carried out in accordance with this EMP. The structure and responsibilities, training program and implementation timetable outlined in this section will facilitate the integration of the EMP into the Project.

The construction and operation Contractor will nominate individuals to hold the relevant positions below to ensure the effective implementation of this plan.

Project/Site Manager (construction and operation)

The Project Manager has the following particular responsibilities under this EMP:

- communicate clear expectation in relation to environmental behaviour and performance to the Project team,
- ensuring that the requirements of this EMP are fully implemented,

- reviewing environmental management reports and plans prepared by the Environmental Representative,
- overall responsibility including coordination and adjudication of issues, concerns, non-conformances, incidents and complaints & ensuring a record of all environment incidents and complaints is maintained,
- ensuring that all Site Supervisors are familiar with the EMP and their responsibilities contained within the plan,
- delegating authority to act in the event of an emergency and to allocate the required resources.

Environmental Representative

The Environmental Representative has the following responsibilities under this EMP:

- responsible for receiving reports of environmental incident, non-conformances and complaints, and placing them in the appropriate register for adjudication,
- assist with the development, implementation and monitoring of the EMP,
- liaison with relevant agencies and authorities,
- co-ordination of specialists as required,
- arranging necessary training of personnel into Project environmental matters,
- reviewing as required construction plans and method statements to check that adequate environmental management measures are incorporated into the planning of particular construction processes,
- establishing and maintaining this EMP in accordance with the requirements of the contract and such that it complies with all applicable environmental regulations,
- ensuring reports are prepared and submitted to relevant authorities and Project personnel as required,
- reporting on environmental performance to identified objectives and targets.

Site Supervisors and Foremen

The Site Supervisors and Foremen have the following particular responsibilities under this EMP:

- ensure through the continual daily surveillance of the Project works that Subcontractors and all personnel onsite comply with the requirements of the EMP, sub plans and environmental procedures,
- installation and maintenance of environmental controls required in the EMP, sub plans and environmental procedures,
- have regard to weather and seasonal conditions when programming daily works activities (e.g. vegetation removal, excavation works),
- report environmental incidents (actual/potential) to the Project Manager, and Environmental Representative and assist in resolution,
- participate in any internal or external environmental inspections and audits if requested,
- carry out maintenance on environmental controls as required.

Site Engineers

Site Engineers have the following particular responsibilities under this EMP:

- preparation of work type/area specific procedures, Safe Work Method Statements, Permits and other relevant documentation in close liaison with the Environmental Representative,

- ensuring that Foreman, Supervisors and Sub-contractors are aware of the environmental procedures and the need to effectively implement the procedures,
- supervision of workforce and Sub-contractors with respect to environmental compliance,
- monitoring and maintaining the works in conformance with the environmental procedures,
- managing environmental incidents.

Other personnel including Sub-consultants and Sub-contractors

Other personnel including Sub-consultants and Sub-contractors have the following particular responsibilities under this EMP:

- compliance with site induction requirements for all aspects of environmental management,
- compliance to the EMP and all plans and procedures as they apply to their operations on the site,
- reporting all environmental incidents to the Foreman, Supervisor or Site/Project Engineer immediately,
- following instructions issued by the Project team and supervisory personnel as they relate to environmental management and incidents.

9 Training and Continuous Improvement

Three main forms of training will be provided on site:

- Site inductions - roles and responsibilities, introduction to the Project and assigned tasks in regard to the EMP;
- Environmental awareness training – environmental awareness training will be tailored to allow personnel to complete assigned tasks in regard to the EMP; and
- “Toolbox” training.

Records of induction and training will be kept by the construction and operations Contractors on a database including the topic of the training carried out, dates, names and trainer details. Inductees will be required to sign-off that they have been informed of the environmental issues and that they understand their responsibilities. The Environmental Representative will review the program and monitor its implementation.

A hard copy of the EMP and all sub-plans will be made available in a central location in the site office for access by all personnel on the project.

9.1 Environmental Inductions

Adequate training and instruction will be provided to all personnel to allow them to perform their duties whilst ensuring the environmental impacts associated with the Project are minimal.

Induction training material will be prepared by the Environmental Representative of the construction and operation contractors and will be tailored to address matters relevant to each inducted person. There will be two levels of induction. Level one will be for visitors, irregular delivery drivers and others who will remain in the company of a fully inducted employee. The level two induction will be required for all permanent employees and Subcontractors working on the site. The level two induction will include all construction and operation work requirements in the EMP and Subplans, including but not limited to the following topics:

- The EMP (purpose, objectives and key issues);
- Legal requirements including applicable legislation, conditions of environmental licences, permits and approvals, due diligence, general environmental duty, and duty to notify and potential consequences of infringements;

- Environmental management strategies and controls for areas such as erosion and sediment control, water discharge, waterway protection, clearing, fauna rescue, noise, refuelling and waste disposal;
- Promoting awareness of significant environmental issues and personnel responsibilities (such as environmentally sensitive areas, limits of construction, identification of exclusion zones and cultural heritage);
- Reporting of environmental incidents - which will include the type of events to be reported, how an event is reported and to whom the event is reported;
- Emergency procedures - which will cover the procedure for an emergency and for evacuation of the site in the event of an emergency situation arising;
- Contingency plans - e.g. for 'hydrocarbon/chemical spills' and the 'discovery of previously unidentified heritage sites' as defined in section 11 of Cultural Heritage Management Plan 12393; and
- Questions pertaining to environment and heritage will be included in the site induction questionnaire to validate employees' understanding of the induction content.

9.2 Environmental Awareness Training

Staff and sub-contractors working on site during construction and operation will be provided with environmental training on an as-needs requirement basis to achieve a level of awareness and competence appropriate to their assigned activities.

Targeted environmental awareness training will be provided to individuals or groups of workers with a specific authority or responsibility for environmental management or those undertaking an activity with a high risk of environmental impact. The training may come in response to hazards identified in the construction risk register, through environmental inspections, or in response to environmental incidents. This training will generally be prepared and delivered by the Environmental Representative. Environmental staff and environmental specialists may also deliver specific environmental training.

9.3 Toolbox Training

A set of topics will be devised for presentation at toolbox meetings during construction to raise awareness of environmental aspects and issues.

Toolbox training will help to ensure that relevant information is communicated to the workforce and that feedback can be provided on issues of interest or concern. Toolbox training will generally be prepared and delivered by the Environmental Representative, Project Engineers or Site Foreman.

Topics covered include erosion and sediment control, dust, waste management, hydrocarbons, flora/fauna and any other Project-specific issues such as the efficient use of plant and materials; noise and vibration minimisation; wastewater control; work methods; management of contaminated soil; and general site issues.

Glossary and Abbreviations

CHMP	Cultural Heritage Management Plan
CFA	Country Fire Authority
CMA	Catchment Management Authority
DDWF	Dundonnell Wind Farm



DEDJTR	Department of Economic Development, Jobs, Transport and Resources
DELWP	Department of Environment, Land, Water and Planning
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EPA	Environmental Protection Agency Victoria
MSC	Moyne Shire Council
MOPS	Heywood-Moorabool 500kV substation
the Planning Permit	Planning Permit No. 2015/23858
RAP	Registered Aboriginal Party
SDS	Safety Data Sheet
SEPP	State Environment Protection Policy

References

- Australian and New Zealand Environment Conservation Council (2000) Water Quality Guidelines for Fresh and Marine Waters
- Country Fire Authority of Victoria (2012) Emergency Management Guidelines for Wind Energy Facilities
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- State Environment Protection Policy (SEPP) (Air Quality Management) 2001
- SEPP (Ambient Air Quality) 2016
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- SEPP (Groundwaters of Victoria) 1997
- State Environment Protection Policy (Waters of Victoria) 2004
- SEPP (Prevention and Management of Contaminated Land) 2002
- Environment Protection (Vehicle emissions) Regulations. EPA Publication 877
- EPA Publication 829: Protocol for Environmental Management 'Minimum Control Requirements for Stationary Sources (2002)'
- EPA Victoria (1991a) Best Practice Environmental Management Series: Construction Techniques for Sediment Pollution Control. Publication 275
- EPA Victoria (1991b) Information Bulletin: A guide to the measurement and analysis of noise. Publication 280
- EPA Victoria (1994) Bulletin No. 344, The Transport and Disposal of Empty Drums containing Hazardous Compounds
- EPA Publication 628: Environmental Guidelines for the Concrete Batching Industry (1998)
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- EPA Victoria (2004) Doing it right on subdivisions. Temporary environmental protection measures for subdivision construction sites. Publication 960
- EPA Victoria (2008) Noise Control Guidelines. Publication TG 302/92
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- National Road Transport Commission (1998) Australian Dangerous Goods Code 6th Edition
- Victorian Government (2002a) Victoria's Native Vegetation Management – A Framework for Action
- Victorian Government (2002b) Victorian Pest Management - A framework for action
- Victorian Pest Management - A framework for action (Victorian Government, 2002b)
- Wimmera CMA (2013) Regional Catchment Strategy 2013-2019

Dangerous Goods (Storage and Handling) Regulations 2012

Occupational Health and Safety (Hazardous Substances) Regulations 1999

Australian Standard 1216: Class labels for dangerous goods (2006)

Australian Standard 1940: The Storage and Handling of Flammable and Combustible Liquids (2004)

Australian Code for the Transport of Dangerous Goods by Road and Rail (2015)

Emergency Management Guidelines for Wind Energy Facilities (CFA, 2012)

Victorian Planning Provisions Bushfire Management Overlay – Fire Safety Guideline Land Use Planning 002.

Appendix A – Implementation Timetable

Environmental program	Pre-construction(2-3 months)	Construction (20-24 months)	Operation (- 26 years)
Environmental Management Plan	<p>Development of Environmental Obligations Register to track environmental requirements, safeguards, project commitments and monitoring requirements.</p> <p>Development of training and awareness material.</p>	<p>Informal site inspections (daily)</p> <p>Environmental inspection (weekly)</p> <p>Environmental audit (3 months and then 6 monthly thereafter)</p> <p>Environmental reporting (monthly)</p> <p>EMP review (yearly)</p> <p>Toolbox training (weekly)</p> <p>Environmental awareness training (when and as required)</p>	<p>Environmental induction</p> <p>Environmental inspection (monthly)</p> <p>Environmental audit (6 monthly)</p> <p>Environmental reporting (monthly)</p> <p>EMP review (5 yearly, and prior to the commencement of the decommissioning phase)</p>
Training Program	<p>Development of training and awareness material.</p> <p>Training and awareness of construction personnel.</p>	<p>Site induction training (initial)</p> <p>Toolbox training (weekly)</p> <p>Environmental awareness training (when and as required)</p>	<p>Environmental induction</p>
Reporting Program	<p>Development of Environmental Obligations Register to track environmental requirements, safeguards, project commitments and monitoring requirements.</p>	<p>Informal site inspections (daily)</p> <p>Environmental inspection (weekly)</p> <p>Environmental audit (3 months and then 6 monthly thereafter)</p> <p>Environmental reporting (monthly)</p> <p>EMP review (yearly)</p>	<p>Environmental inspection (monthly)</p> <p>Environmental audit (6 monthly)</p> <p>Environmental reporting (monthly)</p> <p>EMP review (5 yearly, and prior to the commencement of the decommissioning phase)</p>
Construction and Work Site Management Plan	<p>Training and awareness of construction personnel.</p> <p>Waste and recycling setup.</p>	<p>Implementation of all construction programs and works referred to in the Construction and Worksite Management Plan, associated with:</p>	<p>N/A</p>

Environmental program	Pre-construction(2-3 months)	Construction (20-24 months)	Operation (- 26 years)
	Sanitary facility setup.	<ul style="list-style-type: none"> • Prevention and mitigation of emissions. • Waste disposal. • Concrete batching. • Construction of internal access roads and hardstands. • Laying of foundations. • Electrical construction activities. • Site rehabilitation. 	
Construction Noise Management Plan	<p>Training and awareness of construction personnel.</p> <p>Notification of potentially sensitive receptors.</p>	<p>Implementation of all construction programs and works referred to in the Construction Noise Management Plan, associated with:</p> <ul style="list-style-type: none"> • Implementation of noise reducing measures. • Noise monitoring. • Noise reporting. • Responding to noise complaints. 	N/A
Sediment, Erosion and Water Quality Management Plan	<p>Training and awareness of construction personnel.</p> <p>Micro siting infrastructure to avoid geological and ecological constraints.</p> <p>Installation of erosion and sediment control devices.</p> <p>Setup batching plant water runoff recycling system</p>	<p>Implementation of all construction programs and works referred to in the Sediment, Erosion and Water Quality Management Plan, associated with:</p> <ul style="list-style-type: none"> • Construction and maintenance of access tracks, hard stands, turbine foundations, and ancillary facilities. • Stockpiling and backfilling. • Monitoring and maintenance of erosion and sediment controls, and dust suppression. • Water quality monitoring and treatment (where necessary). • Wastewater disposal. 	<p>Implementation of all operations programs referred to in the Sediment, Erosion and Water Quality Management Plan, associated with:</p> <ul style="list-style-type: none"> • Training and awareness of operational personnel. • Regular inspection of drainage and sediment controls • Maintenance of access tracks and drainage structures.

Environmental program	Pre-construction(2-3 months)	Construction (20-24 months)	Operation (- 26 years)
<p>Hydrocarbon and Hazardous Substances Plan</p>	<p>Training and awareness of construction personnel.</p> <p>Establish SDS register and hydrocarbon and hazardous substances manifest.</p> <p>Storage areas established for hydrocarbons and hazardous substances in accordance with AS1940:2017.</p>	<ul style="list-style-type: none"> • Rehabilitation of disturbed surfaces and revegetation. <p>Implementation of all construction programs and works referred to in the Hydrocarbon and Hazardous Substances Plan, associated with:</p> <ul style="list-style-type: none"> • Hazardous materials storage, handling and use. • Clean-up, soil restoration and waste disposal of potential spills. 	<p>Implementation of all operations programs and works referred to in the Hydrocarbon and Hazardous Substances Plan, associated with:</p> <ul style="list-style-type: none"> • Training and awareness of operational personnel • Permanent hydrocarbons and hazardous substances storage. • Regular site inspections and audits of hazardous materials storage, handling and use. • Clean-up and restoration of potential spills.
<p>Fire Prevention and Emergency Response Plan</p>	<p>Training and fire awareness of construction personnel, including emergency response procedures.</p> <p>Strategic placement of firefighting equipment and water tanks.</p>	<p>Implementation of all construction programs and works referred to in the Fire Prevention and Emergency Response Plan, associated with:</p> <ul style="list-style-type: none"> • Separating combustible material from ignition sources wherever practicable. • Restricting hot work activities during high fire danger periods. • Maintenance of firefighting equipment. 	<p>Implementation of all operations programs and works referred to in the Fire Prevention and Emergency Response Plan, associated with:</p> <ul style="list-style-type: none"> • Training and awareness of operational personnel. • Conducting a familiarisation visit to

Environmental program	Pre-construction(2-3 months)	Construction (20-24 months)	Operation (- 26 years)
			<p>the site and explanation of emergency services procedures for: The CFA, Rural Ambulance Victoria, Moyne Shire Council, and Victoria Police.</p> <ul style="list-style-type: none"> • Restricting hot work activities during high fire danger periods • Maintenance of firefighting equipment
Blasting Management Plan	<p>Preparation of on-site task specific Blast Management Plan in line with the WorkSafe Guidance Note for Blast Management Plans.</p> <p>Establish storage areas for explosives approved by the Blasting Engineer, including clear warning signs.</p>	<p>Implementation of all construction programs and works referred to in the Blasting Management Plan, associated with:</p> <ul style="list-style-type: none"> • Transport and handing of explosives • Notification in writing of occupants of residences within 1km of the blasting location. • Conducting blasting in accordance with Blast Management Plan. • Inspected pre-and-post blasting for existing condition with damage recorded through notes and photographs. • Maintenance of blast records. • Rehabilitation of disturbed areas. 	N/A
Vegetation Management Plan	<p>Training and awareness of construction personnel.</p> <p>Microsite construction areas away from potential habitat and native vegetation</p>	<p>Implementation of all construction programs and works referred to in the Vegetation Management Plan, associated with:</p>	<p>Implementation of all operations programs and works referred to in the Vegetation Management Plan, associated with:</p>

Environmental program	Pre-construction(2-3 months)	Construction (20-24 months)	Operation (- 26 years)
	Establishing fencing and signage within 50m of retained native vegetation.	<ul style="list-style-type: none"> • Remain within the defined 'impact areas'. • Removal of permitted native vegetation under Permit no. 2015/23858. • Maintaining the integrity of fencing and flagging around retained native vegetation. • Rehabilitation of disturbed areas. 	<ul style="list-style-type: none"> • Training and awareness of operational personnel. • Ensuring all vehicles remain within the defined 'impact areas'.
Biosecurity Management Plan	Establish wash bays where necessary, or divert dirty vehicles and plant to commercial wash facilities. Conduct pre-construction pest animal survey	Implementation of all construction programs and works referred to in the Biosecurity Management Plan, associated with: <ul style="list-style-type: none"> • Conducting vehicle and machinery biosecurity inspections to ensure all are weed and pathogen free upon mobilisation to site. • Preventing the introduction and spread of weeds. • Controlling pest animal species • Spot spraying of any noxious weeds. • Conducting post-construction pest animal survey 	Implementation of all operations programs and works referred to in the Biosecurity Management Plan, associated with: <ul style="list-style-type: none"> • Training and awareness of operational personnel. • Spot spraying of any noxious weeds.
Fauna Management Plan	Induction and training on species of concern for construction personnel. Microsite construction areas away from potential habitat and native vegetation	Implementation of all construction programs and works referred to in the Fauna Management Plan, associated with: <ul style="list-style-type: none"> • Preventing species of concern entering construction footprint. • Daily checks of excavations and trenches for trapped fauna. • Implementation of salvage and translocation protocol, if required. 	Training and awareness of operational personnel.

Environmental program	Pre-construction(2-3 months)	Construction (20-24 months)	Operation (- 26 years)
		<ul style="list-style-type: none"> Re-establishment of habitats/native vegetation. 	
Striped Legless Lizard and Fat-Tailed Dunnart Salvage and Translocation Protocol	Construction personnel trained in the recognition of the Striped Legless Lizard and Fat-tailed Dunnart.	Implementation of salvage and translocation protocol, if required. Daily checks of excavations and trenches for trapped fauna.	Training and awareness of operational personnel.

**APPROVED FOR THE
MINISTER FOR PLANNING**

SHEET 43 OF 301



Appendix B – Construction and Work Site Management Plan



Dundonnell Wind Farm

Construction Work Site Management Plan

Revision G
27/11/2018

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Revision History

Revision	Changes	Date	Prepared By	Approved By
A	Document Developed	26/03/2018	JR	ED
B	Updated to address comments and EES requirements	07/05/2018	JR	ED
C	Updated to address TILT comments	06/06/2018	ED	ED
D	Updated for Agency Review	20/06/2018	CL	MG

E	Updated in response to agency comments	20/09/2018	DH	ED
F	Update in response to agency comments	11/10/2018	ED	MG
G	Update in response to agency comments	26/11/2018	ED	

1 Introduction

This Construction and Worksite Management Plan (CWSMP) has been prepared by Zenviron Pty Ltd, on behalf of Dundonnell Wind Farm Pty Ltd, in relation to the Dundonnell Wind Farm.

The Dundonnell Wind Farm was approved by the Minister for Planning in July 2016 under Planning Permit 2015/23858 (the Planning Permit), issued 23 October 2016.

This CWSMP has been prepared in accordance with of Condition 40 of the Planning Permit and is generally in accordance with Chapter 25 of the Dundonnell Wind Farm EES (June 2015). The purpose of this plan is to outline how construction works will be managed to minimise pollution and other potential environmental impacts. The requirements for the CWSMP that are set out in the Planning Permit conditions are presented in Table 2.

2 Objectives, key issues and statutory requirements

Table 1 - Summary of objectives, key issues and relevant statutory requirements.

Objectives	Provide guidance on environmental protection measures to be implemented on works undertaken within the work areas during construction
Key Issues	<p>Inappropriate completion of works</p> <p>Risk of injury to native fauna, domestic stock, native vegetation and heritage values during the development of the wind farm</p> <p>Risk of injury, illness or nuisance to personnel working on site and members of the public, and visitors to the site during construction</p>
Relevant legislation, standards and/or guidelines	<p>Environmental Protection Act 1970</p> <p>Planning and Environment Act 1987</p> <p>Catchment and Land Protection Act 1994</p> <p>Moyne Shire Planning Scheme</p> <p>SEPP (Waters of Victoria) 2003</p> <p>SEPP (Ground Waters of Victoria) 1997</p> <p>Glanelg Hopkins Regional Catchment Strategy 2013–2019</p> <p>EPA Publication 480 Environmental Guidelines for Major Construction Sites</p> <p>EPA Publication 275 Construction Techniques for Sediment Pollution Control</p> <p>EPA Victoria (1998) 'Environmental Guidelines for the Concrete Batching Industry'. Publication 628.</p> <p>EPA Victoria (2013) 'Code of Practice - Onsite wastewater management'. Publication 891.3.</p>

	WorkSafe Victoria (2008) 'Compliance Code - Workplace amenities and work environment' Excavation Work Code of Practice 2015
License/permit requirements	Licensed personnel to remove protected fauna

3 Permit Condition Requirements

Table 2 - Relevant planning permit conditions from the Planning Permit (Moynes Shire Council).

Condition 40	Requirement	Relevant section
(a)	The identification of fuels, other hazardous materials and all other potential contaminants stored or used on site during the construction phase of the wind energy facility and appropriate storage, construction and operational methods to control any identified contamination risks;	4.1.5
(b)	Procedures for managing potential spills and leaks and pollution incidents, including incorporation of appropriate pollution control measures outlined in EPA publication 480 Environmental Guidelines for Major Construction Sites (February 1996);	4.1.4
(c)	Procedures to suppress dust emissions from construction-related activities. Appropriate measures may include water spraying of roads and stockpiles, stabilising surfaces, temporary screening and wind fences, modifying construction activities during periods of heightened winds and revegetating exposed areas as soon as practicable;	4.1.3
(d)	Procedures for managing noise emissions from construction-related activities;	4.1.2
(e)	Criteria for the siting of any temporary concrete batching plant associated with the development of the wind energy facility and the procedure for its removal and reinstatement of the site once it's use finishes. The establishment and operation of any temporary concrete batching plan must be designed and operated in accordance with EPA Publication 628 Environmental Guidelines for the Concrete Batching Industry (June 1998) and taking into account the location of key stony rise areas, as well as the springs and wetlands on the site;	4.1.9
(f)	Appropriate sanitary facilities to be provided for construction and maintenance staff, which must be designed and operated in accordance with EPA Publication 891.3 Code of Practice – Onsite wastewater management (February 2013);	4.1.10
(g)	The identification of waste re-use, recycling and disposal procedures;	4.1.7
(h)	A timetable, where practicable, for the construction of turbine bases, access tracks and power cabling during warmer months, to minimise impacts on ephemeral wetlands, local fauna and sediment mobilisation;	4.2

Condition 40	Requirement	Relevant section
(l)	Procedures to ensure that construction vehicles and equipment use designated tracks and works areas to avoid impacts on native vegetation;	4.3
(j)	Procedures for covering trenches and holes at night, and filling trenches as soon as practical after excavation, to protect native fauna;	4.4
(k)	The removal of works, buildings and staging areas on completion of the construction phase of the project; and	4.5
(l)	Protocols for avoiding, demolishing or altering historic dry-stone walls, and where not possible procedures for replacing demolished sections with gates.	4.3

4 Construction and worksite management

4.1 Pollution Management

4.1.1 Access to site

The works shall be undertaken within the site boundary identified on the approved development plans. Areas outside of this approved area and the designated access roads shall be considered “no-go” areas. Access to site will be limited to agreed site access points via approach routes as per the Traffic Management Plan. Clear signage will be displayed at access points to direct site personnel and visitors around site as required. All visitors will be required to report to the site offices and comply with the relevant induction prior to entering the greater site. Further, “no-go” areas will be delineated to control access. This will include marking off areas of ecological and cultural significance.

4.1.2 Noise

Construction noise will be managed by following the Construction Noise Management Plan. Mitigation measures include siting temporary buildings to act as an acoustic barrier, selecting the quietest plant as practicable, and shutting down plant when not in use.

All site works must adhere to the construction noise limits and monitoring noise as dictated by the Construction Noise Management Plan.

4.1.3 Dust emissions

Dust generation is likely to occur on site through vehicle movements, handling of soils (excavation and transport), batching plant, blasting operations (if required) as well as static soil stockpile. Proactive measures will be implemented to prevent the generation of dust and where dust is generated controls implemented.

In order to minimise the generation of dust the following measures will be implemented:

- Haulage vehicles must possess dust curtains which must be closed when carrying a load.
- Construction traffic speeds will be controlled to reduce dust generation.
- Batching plants are to be supplied with and use dust control sprinklers as practicable.
- Water carts will be used on site to manage the generation of dust during adverse weather.
- Public roads will be kept free of site based materials.
- Vehicle cleaning stations including wheel washes or rumble strips as required will be used on site to minimise the spread of dirt and generation of dust from these vehicles.
- Exposed surfaces will be minimised as much as practicable, and progressively revegetated.

Stockpiles that will remain bare for more than 28 days are to be shaped with a flat top and stabilised using approved soil binders, by covering with mulch, anchored geotextile fabrics, or seeding with sterile grass/hydro seed as approved by the Project Manager (as per the Sediment, Erosion and Water Quality

Management Plan). Dust spread during construction phase shall be visually monitored on an ongoing basis. Where dust generation does occur, dust will be controlled by either watering down of exposed surfaces (including roads, temporary stockpiles and excavation sites etc.) or erection of a physical screen. Recycled water will be used where possible on exposed surfaces or the application of an approved suppression agent.

Where dust cannot be sufficiently managed through the measures above, all dust generating works will cease to prevent further dust from being generated.

4.1.4 Spills and leaks

Handling of fuels and hazardous substances will be managed in accordance with the Hydrocarbon and Hazardous Substances Management Plan and the respective Safety Data Sheet (SDS).

The management of spills and leaks will incorporate measures from EPA Victoria (1996) Publication 480 including Section 8.1 Emergency procedures and Section 8.4 Storage of chemicals and fuels.

In the event of any spills and leaks the SDS and Hydrocarbon and Hazardous Substances Plan are to be followed.

Spill kits are to be available at appropriate locations across the site and personnel are to be trained in the use of these kits.

4.1.5 Potential contaminants and hazardous materials

A number of potentially hazardous chemicals/materials will be used and stored on the Project during the construction and operation phases. These materials will require careful management in their storage and handling to protect both the environment and on-site personnel.

The following substances are expected to be stored, used and/or created on site during the construction and operations phases:

- Aggregates
- Agricultural pesticides and/or herbicides
- Alkaline wastewater produced from concrete batching activities
- Coolants
- Chemicals for cleaning equipment and parts
- Cement and concrete admixture chemical
- Explosives for blasting rock material
- Liquid fuels including diesel, petrol and gas (LPG)
- Lubricating and hydraulic oils
- Oxygen and acetylene gas, paints and chemical cleaner will be general in use.
- Waste and effluent from amenities

A register of all potential contaminants and hazardous materials imported to site for storage will be compiled and maintained. This register will as a minimum identify:

- Description of material
- Storage location
- Verification exterior labelling in place
- Emergency waste management procedures
- Specialist clean up contractor contact details.

All hazardous materials shall be handled and stored in a manner which mitigates risk of spillage and accidental contamination of drainage routes. Hazardous materials will be disposed as prescribed industrial waste (PIW) and managed by an EPA Victoria accredited waste management contractor.

The procedure for guarding against potential weed contamination due to vehicle movements as outlined in the Biosecurity Management Plan will be implemented including regular surveys and remedial action.

Material shall not be stockpiled along the border of any water course or drainage line and contaminated material stockpiles shall be stored under cover so as to prevent erosion and run off during rainy periods in line with the Sediment, Erosion and Water Quality Management Plan.

4.1.6 Water contamination and storm water management

A register of potential sources of contamination of the surrounding environment associated with construction and operation of the wind farm facility shall be developed and maintained along with industry standard risk mitigation techniques for each. As a minimum, the list shall include the following potential pollutants:

- Petrochemical fuels (diesel, petrol)
- Hydraulic oils
- Concrete batching components (cements, lime)
- Paints
- Adhesives
- Soaps and detergents
- Waste water
- Soil wash outs on site from excavations/spoil storage areas.

Procedures to capture storm water runoff within the site are outlined in the Sediment, Erosion and Water Quality Management Plan, in particular for the concrete batching plan and construction phase.

There are numerous designated minor waterways within the project area, for any works that are proposed to occur within 20m of the bed and banks of these areas a Works on Waterway permit, from GHCMA, will be required. The current proposed design has included an effort to avoid these waterways and the surface water assessment in the EES has shown that no designate waterways currently occur within 20m of a turbine, access track or other wind farm associated infrastructure. Refer to EMP Appendix M Figure 2 for the location of designated waterway areas including the associated 20m buffer zone.

4.1.7 Waste management procedures

Construction of the Project is likely to create waste materials including removed topsoil, excess of materials required for construction, litter and concrete spoilage. To manage and minimise waste, the project will follow guidance from EPA Publication 480: Best Practice Environmental Management – Environmental Guidelines for Major Construction Sites including waste minimisation procedures based on the waste hierarchy outlined in Table 3.

Opportunities for waste avoidance, reuse and recycling will be considered wherever practicable in the construction of the Project. Onsite examples could include using contaminated water out of sediment dams for dust suppression or using overburden to create temporary noise barriers.

Where a higher level of use cannot be identified for waste materials, they will be disposed of at a suitably licensed waste facility. If the circumstance arises that requires prescribed waste to be removed from the site, waste should be removed using vehicles with the appropriate EPA Victoria Transport Certificates and the waste taken to an appropriate licenced facility.

The Project shall be maintained in a tidy and organised manner with regard to minimising environmental impact on the site and neighbouring properties, this shall include emptying of waste containers on a regular basis to avoid the bins becoming full or overflowing.

Construction materials or liquids should be sourced from reusable packaging where practicable to maximise opportunities for recycling.

Waste disposal areas shall be secured in a way which guards against material dispersion, particularly in high wind conditions.

Solid waste shall not be buried or burned on site, all remaining waste will be segregated, analysed and classified as required, to ensure the appropriate disposal of waste.

Solid waste shall be only be disposed after considering recycling potential and only be in registered landfill facilities.

4.1.8 Recycling

Construction activities shall be undertaken to promote the most efficient use of resources, including resource recovery and avoidance of unnecessary consumption by following the hierarchy of actions below.

Table 3 - Waste Management Hierarchy

Waste Management Hierarchy	Action or response
Avoid	Prevent or reduce waste generation where practicable Prevent or reduce the environmental impacts (e.g. toxicity) of waste generated.
Reduce	Adopt methodologies which minimise waste production. Avoid use of disposable materials and products, in particular containers and packaging.
Reuse	Identify, separate and store or remove from site reusable packaging, construction materials and products for future use. Identify possible ways of selling waste to other organisations for their production processes. Store materials in a manner which will maintain their utility.
Recycle	Identify, separate and store materials which may be able to be reused with minor remedial treatment or be reconstituted.
Dispose	Use only approved transfer stations or landfill sites. Separate and dispose of hazardous materials in only designated facilities.

Construction compounds will be set up in a way that facilitates separation of recyclable materials from the construction waste stream and induction procedures will promote the use of these by all site personnel.

4.1.9 Concrete batching plant

The siting criteria and management practices for the concrete batching plant have been developed in line with EPA Victoria (1998) Publication 628. The location for the concrete batch plant on the Dundonnell Wind Farm Project is presented in Figure 2 of the EMP.

Key location considerations include:

- Batching plant should be sited on land that is not flood prone,
- Vehicle access routes to the plant location must utilise established tracks,
- The batching plant should be located at least 100m from any sensitive receptors such as domestic houses, sensitive flora and fauna or other noise, dust emission sensitive areas.

In addition, the location of the concrete batch plant has been chosen in a manner which will avoid the environmentally sensitive locations where stony rises, springs and wetlands are found.

Key management considerations include:

- Wastewater collection pit and recycling tank (sufficient to capture 20mm rainfall within a 24-hour period),
- Upslope stormwater diversions,
- Monitoring offsite discharges,
- Fuel and chemical storage.

At the completion of the construction program all temporary structures associated with the concrete batching plant, will be removed from site and the site will be rehabilitated/remediated in line with Section 4.5 of this plan where required. Any areas of cut and fill associated with the concrete batching plant will be restored to the pre-existing ground level and re-vegetated as soon as possible.

4.1.10 Sanitary facilities

The appropriate number of toilets and ablution facilities shall be provided for construction and maintenance staff in accordance with the WorkSafe Victoria (2008) 'Compliance Code – Workplace amenities and work environment'. This will require an ongoing update on the actual workforce on site at any time and ensuring appropriate ratios of ablution facilities to workers are maintained.

Wastewater management measures will need to ensure that potential risks to water quality are mitigated so as not to impact water quality of downstream receiving environments. Wastewater associated with these sanitary facilities will be either removed directly offsite for treatment by an appropriately licensed operator, or treated on site in an approved facility. In the event that wastewater is to be treated on site, an onsite wastewater treatment system and disposal system will be selected, sited and installed in accordance with the EPA Publication 891: Code of Practice – Onsite wastewater management, which outlines codes of conduct in line with the *Environment Protection Act 1970* and the State Environment Protection Policies – Waters of Victoria (SEPP WoV) and Groundwaters of Victoria (GoV).

In addition to the measures detailed in EPA Publication 891, the risk of contamination of surface water on and downstream of the Moorabool site will be managed by locating wastewater disposal treatment on site at least 100m away from drainage routes or watercourses.

Temporary/portable toilets shall be secured to the ground to guard against movement in high wind conditions.

4.2 Construction timetable to account for seasonal conditions and impacts

Peak works on site are expected to occur when the following construction phases coincide:

- Construction of internal access roads and hardstands,
- Laying of foundations,
- Electrical construction activities.

No ephemeral wetlands have been identified on the site, although potentially suitable habitat was detected for the Corangamite Water Skink and Growling Grass Frog in the south-eastern and north-western part of the wind farm site comprising areas in and around ephemeral and permanent wetlands and drainage lines. The majority of these areas are located within a WTG-free buffer zone, which was introduced during design development to minimise impacts upon these species and the Brolgas. The remaining areas of potential habitat that lie outside the Brolga buffer will be buffered from works within a 55m WTG-free buffer zone.

Seasonal conditions that have the potential to influence environmental outcomes include, but are not limited to::

- Potential erosion due to traffic and excavation activities
- Additional risk of watercourse contamination in extremely wet conditions (in particular batching plant activities)
- Spread of dust in high wind conditions
- Wash out from excavated materials.

It is not practical to limit construction to warmer months. The Site Supervisors and Foremen will provide environmental management measures to minimise impacts affected by weather and seasonal conditions. These management measures are outlined in the Fauna Management Plan and Soil Erosion and Water Quality Management Plan are designed to be utilised throughout the calendar year and their selection or performance is not affected by seasonality or the advent of warmer months.

4.3 Access routes/haul roads

It is proposed to construct a single site entrance for vehicles to access the site, approximately 65km of new on-site tracks and 11km of off-site roads will be constructed between access points, wind turbines, construction compounds and substation areas.

The procedures to ensure that vehicles and equipment use designated tracks to avoid negative environmental impacts include:

- Development of approved access tracks only;
- Clearly delineated areas of access;
- Signage directing traffic to use designated tracks and avoid protected areas; and
-
- Identifying that approved access tracks are to be utilised for vehicle movements during site inductions.

Vehicles and personnel will only be permitted to access approved areas of development, ensuring cultural and environmental sensitivities are protected from harm. Refer to EMP Appendix M Figure 2 Constraints Plan, Figure 3 Native vegetation and fauna habitat, and Figure 4. Traffic and personnel movements on site will be controlled through the following measures:

- The establishment of “no go” areas around sensitive native vegetation, fauna habitat and cultural heritage sensitivities. These areas will be marked on site specific Contractor drawings and plans, surrounded with highly visible delineation, suitable signage (further detail is provided in the DDWF Cultural Heritage Management Plan (CHMP), Native Vegetation Management Plan, and Fauna Management Plan);
- Signage strategically placed to communicate access restrictions onsite;
- Traffic control and direction, particularly at times of major load movements;
- Ongoing maintenance of the condition of access roads;
- Rehabilitation with the aid of a revegetation specialist of any unauthorised damage caused to native vegetation.

Information to ensure that construction vehicles remain on access tracks and work areas to minimise impacts to native vegetation and enhance rehabilitation will be communicated to construction personnel in the following on-site forums:

- Site construction inductions
- Regular toolbox talks to contractor work groups

Management measures outlined in the Vegetation Management Plan are to be included in these toolbox talks and site inductions.

Within the wind farm site are Historic Heritage Areas of value including the Fasham House complex (H7422-0006) and various dry-stone walls. Wind Farm Infrastructure has been located away from these historical places where possible by using existing tracks and gates. Where impacts are proposed to dry stone walls, consideration will be given to the following:

- During the design phase, sections in poorest condition, as determined by an historic archaeologist, will be considered in the first instance for gates and access track locations. These comprise sections where only the basal course or only loose stone remains.
- Damage to the original dry-stone fabric must be mitigated by the reconstruction of walls and wall terminals to the same specification and traditional style as the existing walls and by using the same materials.
- Any dry-stone wall work must be conducted by a suitably qualified dry stone waller.

- In order to avoid any inadvertent harm to the dry-stone walls, a buffer of 5m during construction should be considered by the contractor.
- The location of all dry stone walls will be shown on all relevant work plans.

4.4 Trenching

All trenches, excavations and holes will be managed to prevent impact to local fauna. If trenches are left open overnight, the first preference will be to cover them with boarding. Where providing a cover is not practicable, fencing to prevent fauna access will be installed.

Trenches will be inspected by the construction Contractor at the commencement of each day and prior to backfilling to check that native fauna have not been entrapped. Trapped fauna will be handled only by competent and approved wildlife handlers.

The program for trenching and underground cabling activities will be staged in a way that helps minimise time open ground trenches and excavations are left exposed including scheduling of weekend work. Trenches will be filled as soon as practical after excavation.

Specific management measures to minimise impacts to fauna by trenching activities during the construction phase, can be found in the Fauna Management Plan.

4.5 Site rehabilitation

At the completion of project construction, the site will be returned as close as practical to its pre-construction condition. This includes but is not limited to:

- Construction plant and equipment being removed from site,
- Temporary facilities being removed from site and footprints rehabilitated,
- Construction traffic signage being removed,
- Construction barriers and markers being removed as soon as safe to do so,
- Construction waste being removed from site.

Vegetation rehabilitation will be conducted for those parts of the site that have been impacted by temporary activities, in particular:

- Batching plants,
- Construction compounds,
- Temporary site offices and ablutions,
- Materials and spoil stockpile areas.

Specific management measures for rehabilitation can be found in the Vegetation Management Plan for the Dundonnell Wind Farm, prepared by Brett Lane & Associates.

The Site Supervisors and Foremen will be responsible for implementing the specific rehabilitation management measures outlined in this CWSMP. The site Environmental Representative would provide technical advice with regard to implementing the specific management measures outlined in this plan.

4.6 Ground disturbance and vegetation clearing hold point

Planning for any ground or vegetation disturbance involves ensuring the activity is permissible with the planning conditions, legislative requirements and the EMP and sub-plans for the project, and that controls are considered and adopted to minimise environmental impacts.

The construction Contractor will ensure any land or vegetation disturbance activity will not take place without an approved Vegetation Disturbance Permit or similar. Permits will be submitted by the Site Supervisors and Foremen to the Environment Representative for approval prior to the proposed activity, to ensure the activity is permissible and careful consideration is given to minimising environmental harm.

Environmental controls referred to in this EMP and sub-plans may be required to mitigate or guard against environmental risks associated with the disturbance activity. These controls will be documented in the permit.

5 Conclusion

Numerous recommendations have been proposed as part of this document with reference to many other project documents. Reference must be made to other relevant documentation to ensure most up-to-date procedures are followed.

6 Glossary and abbreviations

CWSMP	Construction Work Site Management Plan
CHMP	Cultural Heritage Management Plan
DDWF	Dundonnell Wind Farm
EMP	Environmental Management Plan
EPA	Environment Protection Authority Victoria
GoV	Groundwaters of Victoria
GHCMA	Glenelg Hopkins Catchment Management Authority
the Planning Permit	Planning Permit No. 2015/23858
SDS	Safety Data Sheet
SEPP	State Environment Protection Policy
WoV	Waters of Victoria

7 References

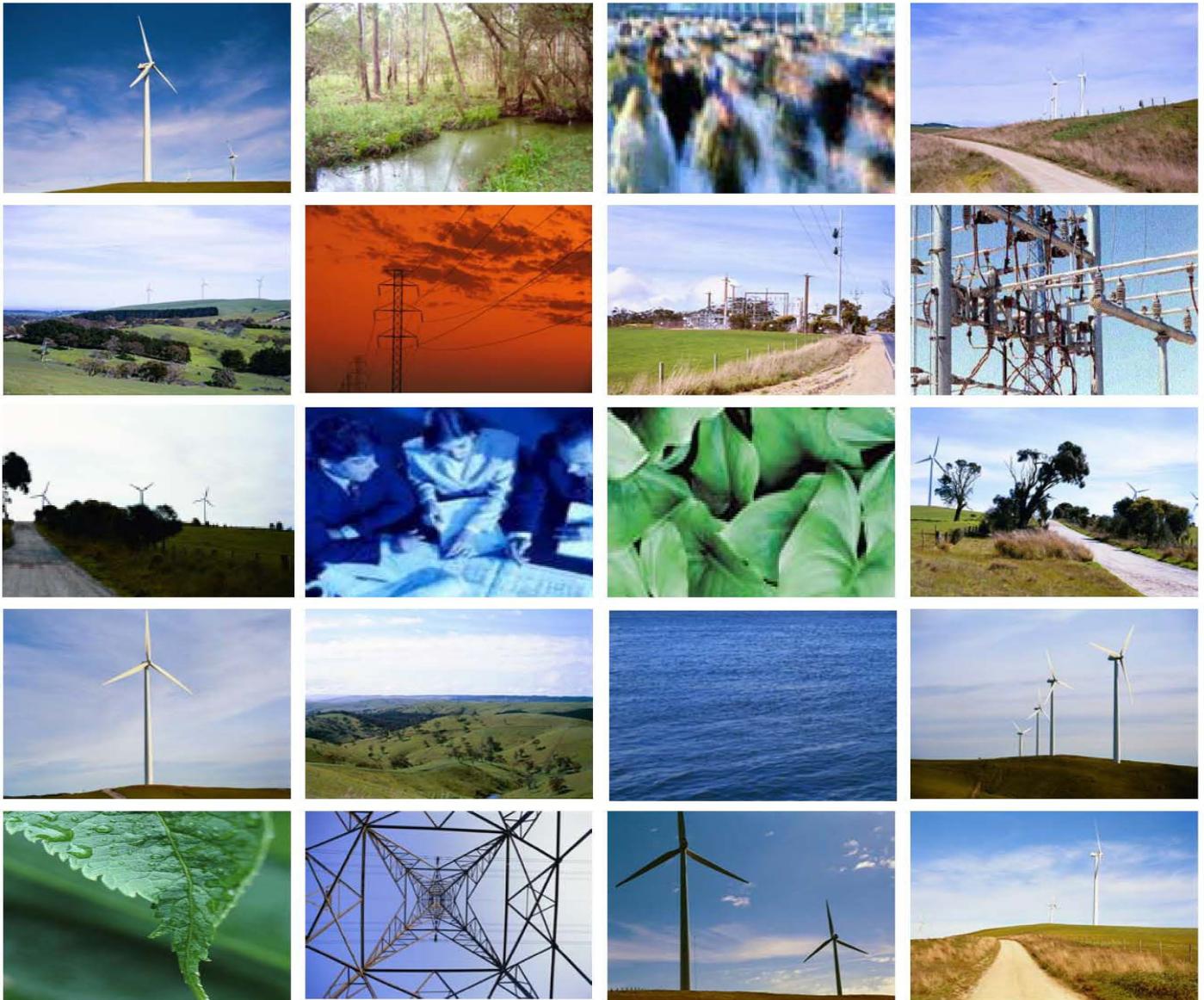
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EPA Victoria (2008) 'Code of Practice - Onsite wastewater management'. Publication 891.2.

WorkSafe Victoria (2008) 'Compliance Code - Workplace amenities and work environment'.

Appendix C – Construction Noise Management Plan



Dundonnell Windfarm

Construction Noise Management Plan (CNMP)

Zenviron

November 2018

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MINISTER FOR PLANNING**

SHEET 57 OF 301

Revision	Description	Date	Prepared By	Approved By
A	First draft circulated	25/06/2018	N Lynch	P Douglass
B	Second draft circulated	21/09/18	N Lynch	P Douglass
C	Addition to Section 8.1 Complaint handling	26/11/2018	C Hartley	P Douglas

Dundonnell Windfarm

Construction Noise Management Plan (CNMP)

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COMPLIANCE MATRIX

This Construction Noise Management Plan (CNMP) has been prepared with due regard to and in accordance with the applicable technical standards and guidelines identified in *Chapter 3* in the main body of the plan.

This version (V2.0, June 2018) the CNMP was developed based on achieving all items specified by:

- Planning and Environment Regulations 2015 - *Section 97F - Form 11 - Planning Permit Granted by the Minister Under Section 97F of the Planning and Environment Act 1987*, Permit No.: 2015/23858
- State Government of Victoria - Environment Protection Authority (EPA) Victoria - *Noise Control Guidelines* (EPA Publication 1254), October 2008.
- Dundonnell Wind Farm - *Environmental Management Framework* (EMF, 2015), prepared by Trustpower and dated June 2015.

A *Compliance Matrix*, which identifies where each specific noise requirement is addressed in this CNMP is provided in *Table 0.1* to *0.4* below.

Table 0.1 Compliance Matrix (Permit No.: 2015/23858)

Condition	Requirement	Plan Section(s)
41	Construction Noise Management Plan The environmental management plan must include a construction noise management plan. The construction noise management plan must include:	This CNMP
a)	Performance requirements for noise at nearby receptors in accordance with EPA Publication 1254.	Chapter 5
b)	Procedures for measuring compliance with performance requirements.	Chapter 7
c)	Procedures for receiving evaluating and responding to complaints.	Chapter 8
1. Source: Planning and Environment Regulations 2015 - Section 97F - Form 11 - Planning Permit Granted by the Minister Under Section 97F of the Planning and Environment Act 1987, Permit No.: 2015/23858		

Table 0.2 Compliance Matrix (EPA Publication 1254)

Section	Requirement	Plan Section(s)
2	Construction and Demolition Site Noise This applies to: <ul style="list-style-type: none"> industrial and commercial premises. large-scale residential premises under construction in non-residential zones, as defined in regulation 9 of the Environment Protection (Residential Noise) Regulations 2008. <p>Other than for some large-scale residential premises, this guideline does not apply to noise from construction of private residential dwelling(s). These are subject to the Environment Protection (Residential Noise) Regulations 2008. The purpose of this guideline is to protect nearby residential premises from unreasonable noise. Commercial and other premises affected by noise should be considered and reasonable measures implemented to reduce impact on these premises.</p>	Noted
2. Sub-section: Community Consultation and Work Scheduling	Community consultation is essential for large-scale projects or high-impact works. Where the community will be significantly impacted, consult on the benefits and drawbacks of different scheduling, planning and remediation options. The following requirements apply to large projects with nearby sensitive uses: <ul style="list-style-type: none"> Inform potentially noise-affected neighbours about the nature of construction stages and noise reduction measures. 	See below Section 6.1

Section	Requirement	Plan Section(s)
2. Sub-section: Community Consultation and Work Scheduling (cont'd)	<ul style="list-style-type: none"> Give notice as early as possible for periods of noisier works such as excavation. Describe the activities and how long they are expected to take. Keep affected neighbours informed of progress. 	Section 6.1
	<ul style="list-style-type: none"> Appoint a principal contact person for community queries. 	
	<ul style="list-style-type: none"> Provide 24-hour contact details through letters and site signage. Record complaints and follow a complaint response procedure suitable to the scale of works. 	
	<ul style="list-style-type: none"> Within normal working hours, where it is reasonable to do so: <ul style="list-style-type: none"> schedule noisy activities for less sensitive times, (for example, delay a rock-breaking task to the later morning or afternoon) provide periods of respite from noisier works (for example, periodic breaks from jackhammer noise). 	Section 6.2
	<ul style="list-style-type: none"> The weekend/evening work hours in the schedule (including Saturday afternoon or Sunday) are more sensitive times and have noise requirements consistent with quieter work. 	
	<ul style="list-style-type: none"> The weekend/evening periods are important for community rest and recreation and provide respite when noisy work has been conducted throughout the week. Accordingly, work should not usually be scheduled during these times. 	
2. Sub-section: Work Requirements	Noise reduction measures should be developed through initial project planning, tenders for equipment and subcontracts. Larger projects should develop a noise management plan (potentially part of a broader environmental management plan) and may require advice from an acoustic specialist, particularly if works are proposed outside of normal working hours. The following measures apply:	This CNMP
	<ul style="list-style-type: none"> Where work is conducted in a residential area or other noise-sensitive location, use the lowest-noise work practices and equipment that meet the requirements of the job. 	Section 6.3
	<ul style="list-style-type: none"> Site buildings, access roads and plant should be positioned such that the minimum disturbance occurs to the locality. Barriers such as hoardings or temporary enclosures should be used. The site should be planned to minimise the need for reversing of vehicles. 	
	<ul style="list-style-type: none"> All mechanical plant is to be silenced by the best practical means using current technology. Mechanical plant, including noise-suppression devices, should be maintained to the manufacturer's specifications. Internal combustion engines are to be fitted with a suitable muffler in good repair. 	
	<ul style="list-style-type: none"> Fit all pneumatic tools operated near a residential area with an effective silencer on their air exhaust port. 	
	<ul style="list-style-type: none"> Install less noisy movement/reversing warning systems for equipment and vehicles that will operate for extended periods, during sensitive times or in close proximity to sensitive sites. Occupational health and safety requirements for use of warning systems must be followed. 	
	<ul style="list-style-type: none"> Turn off plant when not being used. 	
	<ul style="list-style-type: none"> All vehicular movements to and from the site to only occur during the scheduled normal working hours, unless approval has been granted by the relevant authority. 	

Section	Requirement	Plan Section(s)
2. Sub-section: Work Requirements (cont'd)	<ul style="list-style-type: none"> Where possible, no truck associated with the work should be left standing with its engine operating in a street adjacent to a residential area. 	<i>Section 6.3.1</i>
	<ul style="list-style-type: none"> Special assessment of vibration risks may be needed, such as for pile-driving or works structurally connected to sensitive premises. 	<i>Section 1.1</i>
	<ul style="list-style-type: none"> Noise from the site needs to comply with the requirements of the schedule, except for: <ul style="list-style-type: none"> unavoidable works. night period low-noise or managed-impact works approved by the local authority. 	Noted
2. Sub-section: Work Requirements, Unavoidable Works	Unavoidable works are works that cannot practicably meet the schedule requirements because the work involves continuous work – such as a concrete pour – or would otherwise pose an unacceptable risk to life or property, or risk a major traffic hazard. Affected premises should be notified of the intended work, its duration and times of occurrence. The relevant authority must be contacted and any necessary approvals sought.	<i>Section 6.1</i>
2. Sub-section: Work Requirements, Low-Noise or Managed-Impact Works	<p>Low-noise or managed-impact works are works approved by the local authority:</p> <ul style="list-style-type: none"> That are inherently quiet or unobtrusive (for example, manual painting, internal fit-outs, cabling), or Where the noise impacts are mitigated (for example, no impulsive noise and average noise levels over any half hour do not exceed the background) through actions specified in a noise management plan supported by expert acoustic assessment. <p>Low-noise or managed-impact works do not feature intrusive characteristics such as impulsive noise or tonal movement alarms.</p>	<i>Section 6.2</i>
2. Sub-section: Work Requirements, Schedule: Construction and Demolition Site Noise	<p>Normal working hours:</p> <p>Noise to follow the requirements above during the hours of:</p> <ul style="list-style-type: none"> 7 am – 6 pm Monday to Friday. 7 am – 1 pm Saturdays. 	<i>Section 2.3.4</i>
	<p>Weekend/evening work hours</p> <p>Noise level at any residential premises not to exceed background noise by:</p> <ul style="list-style-type: none"> 10 dB(A) or more for up to 18 months after project commencement. 5 dB(A) or more after 18 months. during the hours of: <ul style="list-style-type: none"> 6–10 pm Monday to Friday. 1–10 pm Saturdays. 7 am – 10 pm Sundays and public holidays. 	

Section	Requirement	Plan Section(s)
2. Sub-section: Work Requirements, Schedule: Construction and Demolition Site Noise (cont'd)	<p>Night period</p> <p>Noise inaudible within a habitable room of any residential premises during the hours of:</p> <ul style="list-style-type: none"> 10 pm – 7 am Monday to Sunday 	Section 2.3.4
2. Notes	Noise from construction of large-scale residential premises in non-residential zones (see regulation 9 of the Environment Protection (Residential Noise) Regulations 2008) is subject to the unreasonable noise provisions of s48A(3) of the EP Act at all times of day. In all circumstances, the assessment may have regard to this noise control guideline.	Noted
	This guideline affirms the minimum expectation that noise from these sites must not be audible within a habitable room of any residential premises between 10 pm and 7 am. This is considered unreasonable noise under the EP Act. However, provision is made for circumstances of unavoidable works or low-noise or managed-impact works.	Noted
	This guideline does not limit the general ability of a local government or police officer to assess the unreasonableness of noise at any time. For example, if unavoidable works were done in an unnecessarily noisy way, this may be considered to be unreasonable. General noise at any time during the day might still be considered unreasonable, taking into account the work practices and circumstances of the noise. As specified in s48A(4) of the EP Act, assessment must consider the attributes of the noise and the time, place and circumstances in which it is emitted.	Noted

1. **Source:** State Government of Victoria - Environment Protection Authority (EPA) Victoria – Noise Control Guidelines (EPA Publication 1254), October 2008

Table 0.3 Compliance Matrix (Table 25-10: Noise and Vibration - EMF, 2016)

Objective	Indicators	Plan Section(s)
Project to protect local noise amenity during construction and operation	<ul style="list-style-type: none"> Noise monitoring results are compliant with the adopted assessment criteria. 	Chapter 3 and 5
	<ul style="list-style-type: none"> Project activities undertaken in accordance with a Noise and Vibration Management Plan. 	This CNMP
	<ul style="list-style-type: none"> Quarrying activities undertaken in accordance with a Blasting Management Plan. 	Not Applicable ²
	<ul style="list-style-type: none"> Community complaints (regarding noise and vibration) addressed in accordance with formal complaints recording and management process. 	Chapter 8

Objective	Indicators	Plan Section(s)
Project to protect local noise amenity during construction and operation (cont'd)	<ul style="list-style-type: none"> Operation of the Project controlled and managed by an Operational Noise Management Plan. 	Not Applicable ²
Project to comply with relevant noise criteria including NZS 6808: 2010	See those listed above	Not Applicable ²

- Source: Dundonnell Wind Farm - Chapter 25: Environmental Management Framework (EMF, 2015), prepared by Zenviron and dated June 2018.
- This objective/indicator relates to operational aspects of the wind farm which are not applicable to this construction management plan.

Table 0.4 Compliance Matrix (Table 25-10: Impacts - EMF, 2016)

Impact Number	Impact / Assessment Outcome	Plan Section(s)	
14.01	Noise levels generated during construction activities, including traffic, exceed noise criteria at the sensitive receptor locations	This CNMP	
	<ul style="list-style-type: none"> Construction will be undertaken in accordance with a Construction Noise Management Plan that will address potential noise impacts associated with the proposed construction activities at the nearest receptors. 	<ul style="list-style-type: none"> The Plan will include the following measures: <ul style="list-style-type: none"> Performance Requirements (developed in accordance with the Construction and Demolition Site Noise of EPA Publication 1254 Noise Control Guidelines) Noise Compliance Assessment Noise Complaints Evaluation Noise Complaint Response Plan 	
			Noted
			Chapter 3
			Section 2.3.2
			Chapter 8
14.02	Vibration levels generated during construction activities	This CNMP	
	<ul style="list-style-type: none"> Construction will be undertaken in accordance with a Construction Noise Management Plan which will address potential vibration impacts associated with the proposed construction activities at the nearest receptors. The Plan will include the following measures: 	See below	

Impact Number	Impact / Assessment Outcome	Plan Section(s)
14.02 (cont'd)	- Performance Requirements	Chapter 5
	- Noise Compliance Assessment	Section 2.3.2
	- Noise Complaints Evaluation	Chapter 8
	- Noise Complaint Response Plan	
	<ul style="list-style-type: none"> Residents will be notified of times when access road construction will occur in close proximity to their property. 	
14.03	<p>Noise and vibration associated with on-site quarry operations</p> <ul style="list-style-type: none"> Quarrying activities will be undertaken in accordance with a Blasting Management Plan, if required. Quarry operations will be restricted to the daytime period (Monday to Friday 0700-1800hrs and Saturday 0700-1300hrs). If any changes are proposed in future, a detailed noise assessment will be undertaken and operations will accord with evening time noise limitations. 	Not Applicable ²
14.04	<p>WTG operational noise</p> <ul style="list-style-type: none"> The operation of the Project will be controlled and monitored by an Operational Noise Management Plan, which will detail specific measures to ensure compliance with the relevant noise criteria to the satisfaction of the responsible authority. The following measures will be undertaken: <ul style="list-style-type: none"> When the final WTG model is selected, the sound power levels of the WIG will be compared to the modelled results to assess whether there is a potentially greater noise impact. If compliance with NZS 6808:2010 is not achieved initially, a Noise Reduction Management Strategy will be developed (see below) and the Project will be revised to ensure compliance NZS 6808:2010. A tonal audibility test report will be provided for the final WTG model prior to commencing any site works. The procurement contract for the supply of WII-Gs to the site will typically include specifications concerning the allowable sound power levels from the WTG, and the permissible characteristics of the WTG (including special audible characteristics). In the event that WIG sound power or tonality levels are found to exceed the contracted values, the supplier will be required to implement measures to reduce the noise to the contracted value. This can include measures to rectify manufacturing defects, make appropriate modifications, or implementation of appropriate control settings. A Noise Reduction Management Strategy will be developed (if required), which outlines control measures to achieve noise reductions for predetermined wind speed ranges and directions. 	Not Applicable ²
14.05	<p>Operation of the on-site and/or off-site substation</p> <ul style="list-style-type: none"> The operation of the Project will be controlled and monitored by an Operational Noise Management Plan, which will outline measures to ensure compliance with the relevant noise criteria to the satisfaction of the responsible authority. 	Not Applicable ²

- Source:** Dundonnell Wind Farm – EES Chapter 25: Environmental Management Framework (EMF, 2015), prepared by Trustpower and dated 2015.
- This impact relates to blasting or operational aspects of the wind farm which are either not required (blasting) or not applicable to this construction management plan.

1 INTRODUCTION

This Construction Noise Management Plan (CNMP) has been prepared by ERM for Zenviron Pty Ltd, on behalf of Dundonnell Wind Farm Pty Ltd, in relation to the Dundonnell Wind Farm (the Project or DDWF).

The Dundonnell Wind Farm was approved by the Minister for Planning in July 2016 under Planning Permit 2015/23858 (the Planning Permit), issued 23 October 2016.

This version (V2.0, June 2018) of the CNMP has been prepared in accordance with **Condition 41** of the Planning Permit and is generally in accordance with **Chapter 25** of the Dundonnell Wind Farm Environment Effects Statement (EES, June 2015).

1.1 PURPOSE & APPLICATION OF THE EMP

The purpose of this CNMP is to present a set of project-specific construction noise mitigation and management measures, and monitoring safeguards/provisions that are suitable to the potential magnitude and extent of noise impacts associated with the wind farm.

Preparation of this CNMP also considered the potential risk of vibration impacts to nearby human receptors (disturbance or annoyance issues) or building structures (cosmetic or structural damage). However, based on the type of plant equipment and/or machinery that is proposed to be in use, the activities that are to be undertaken (refer *Table 2.1*), and the distance offsets to nearby receptors (refer *Table 4.1*) it is highly unlikely that any vibration impacts will occur. Therefore the document herein focuses on the mitigation and management of potential noise impacts.

1.2 OBJECTIVES

The overall objectives of these CNMP features is to reduce noise levels and minimise impacts as far as is feasible and reasonable, and practical to implement. Additionally, this CNMP has been prepared to protect local noise amenity during construction. The successful implementation of this CNMP will avoid and/or minimise impacts on the closest and/or potentially most affected noise sensitive receptors situated within the area of influence of the wind farm site, and will extend to minimise impacts on the broader community.

This CNMP presents all project-specific construction noise mitigation and management measures, and monitoring safeguards/provisions that are considered warranted for the required construction works and those that will be considered by the construction contractor, (Zenviron or others associated with the wind farms construction e.g. Vestas for erection activities, referred to as “the construction contractor” herein), and their sub-contractors.

1.2.1

Feasible and Reasonable

For the purposes of this CNMP:

- A feasible mitigation measure is considered to be a measure that can be engineered and is practical to build and/or implement, given project constraints such as safety, maintenance and reliability requirements. It may also include options such as amending construction practices (for example, changing noisy works to a less-sensitive period or location) to achieve noise reduction, as is detailed in the CNMP.
- Selecting reasonable measures from those that are feasible involves judging whether the overall noise and/or vibration benefits outweigh the overall adverse social, economic and environmental effects, including the cost of the mitigation measure:
 - Where mitigation measures are considered both feasible and reasonable they will be implemented.
 - Where mitigation measures are not considered both feasible and reasonable they will not be implemented.

Furthermore, some mitigation and/or management measures may not be feasible and reasonable at all times and at all work locations. In these circumstances alternatives may be considered or a combination of the measures outlined in this CNMP implemented to achieve similar outcomes.

1.3

SCOPE OF EMP

To achieve the CNMP purpose and objectives, in accordance with the standards and guidelines summarised above the following scope of works has been completed:

- Review of general wind farm project data and information e.g. construction methodologies, design plans, etc. as relevant to the CNMP.
- Identify any noise generating sources such as plant, equipment and/or machinery that is to be use, or activities that are to be undertaken during construction phases of the wind farm.
- Review of aerial photos (and consult with Zenviron / Tilt Renewables, referred to as Tilt herein) to identify the closest and/or potentially most affected noise sensitive receptors situated within the vicinity of the wind farm's construction areas.

- Evaluation of existing noise conditions and levels with due regard to the project data and information reviewed (as above), and established construction noise management levels in accordance with the relevant permit conditions and state guidance. Existing noise levels were referenced where and if necessary.
- Evaluation of circumstances where wind farm construction works had the potential to generate emissions that may exceed the project-specific noise management levels, evaluated the potential magnitude and extent of impacts and then identified potential noise mitigation and management measures, and monitoring safeguards/provisions that are suitable to those impacts.

Preparation of this CNMP, in consultation with Zenviron / Tilt, to document the outcomes of the scope described above, documenting all construction noise mitigation and management measures, and monitoring safeguards/provisions that will be implemented during construction phases of the DDWF.

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2 *PROJECT DESCRIPTION*

This chapter presents relevant project information, as applicable to this CNMP, regarding the construction scope of work/activities, noise generating activities equipment (including an assessment and evaluation of likely noise compliance) and the proposed hours of work.

2.1 *PROJECT DETAILS*

The DDWF is located in Western Victoria, 23 kilometres north-east of Mortlake and 21 kilometres west of Derrinallum (refer to *Figure 2.1*). The site comprises an approximate area of 4,200 hectares, with a 220-hectare project footprint and across 11 farming properties. The site is within the Moyne Shire.

The wind farm site lies between private landholdings to the north, east and west, and the Woorndoo-Dundonnell Road to the south. The wind farm site includes the roadsides of Ennerdale Lane, Fashams Lane, Dohertys Lane, Post Office Lane and Dawes Lane.

Existing infrastructure at the site and on the surrounding land is predominately agricultural in nature and includes isolated dwellings, sheds, access tracks and fencing. Refer to *EMP Figure 1: Project Location*.

2.2 *PROJECT DESCRIPTION*

The Project will generally consist of the following components, as shown in *Figure 2.3* below.

- Eighty turbine positions, including a 25 metre diameter base construction area and an adjacent 30 x 50 metre construction pad.
- The 5.5 metre wide turbine access tracks within the wind farm site including a network of 6-metre-wide underground 33 kV distribution cables that connect to the onsite substation.
- The major site access track, which runs from Woorndoo-Streatham Road to the wind farm site (5.5 metres wide).
- The equipment lay-down areas and site office in the western part of the site (200 x 200 metres).
- Temporary concrete batching plant (100 x 100 metres).
- Two proposed on-site quarry sites.
- On-site electrical substation (150 x 200 metres).

The wind farm will be connected to the National Electricity Market via a 38km 220kV transmission line, and offsite substation, to the Mortlake Power Substation (MOPS). This infrastructure has been approved under a separate planning permit, and will be subject to a separate Environmental Management Plan (EMP). Refer to *EMP Figure 2: Indicative Site Layout Plan*.

2.3 SCOPE OF WORKS

The DDWF project will involve construction of up to 88 wind-turbine generators, with a maximum tip-height of 189 metres Above Ground Level (AGL).

Construction noise emissions associated with erecting the wind turbines is generally anticipated to occur at ground level however some less significant noise emissions may occur for elevated components, for example the tower and the nacelle etc.

Significant noise emissions generated at the maximum tip height of 189 metres do not commonly occur during wind turbine erection and associated construction activities. Hence impacts associated with this construction activity (at height) activity are not anticipated.

The wind farm will also involve the construction of a series of internal access roads, the internal (underground) electrical reticulation network (connecting the wind turbines), an on-site electrical substation and on-site permanent facilities office.

The construction of the wind farm may also include minor works associated with the construction of other less significant buildings, such as a substation control room and amenities, ancillary structures and equipment.

Construction of the 220 kV transmission line, connecting Dundonnell wind farm to the Mortlake gas power station (and associated off-site substation at Mortlake) may also generate noise emissions however these are being considered by others and are not addressed further in this CNMP.

2.3.1 Construction Activities

Based on the information summarised above the following noise generating construction activities have been identified and are the focus of this CNMP. The key noise management project components and scenarios are:

- Site preparation, construction/installation works associated with each of the wind-turbine generators.
- Site preparation and building/infrastructure construction works associated with the substation and permanent facilities.

- General construction works/trenching associated with the internal access roads and electrical reticulation network, which provide access/power between the wind-turbines.
- Use of temporary concrete batching plants at select locations.

This CNMP addresses the construction works and activities associated with the project as summarised above but extends to consider construction road traffic noise emissions from the required vehicle movements accessing the site i.e. delivery of permanent infrastructure, delivery of ancillary equipment and access to the site for construction personnel.

This CNMP does not consider or address any operational wind-turbine noise emissions, substation noise during operation, corona and/or aeolian noise from transmission lines, or any blasting overpressure and ground-borne vibration. These features are related to the wind farms operation and are beyond the scope of this document.

A separate Operational Noise Management Plan (OEMP) will be prepared to identify, mitigate and manage potential noise impacts associated with the operation of the wind farm. The OEMP will be prepared to satisfy the requirements of the Dundonnell Wind Farm Environmental Management Framework relating to noise and vibration (*Table 25-10: Impacts - EMF, 2016*), specifically Conditions 14.03, 14.04 and 14.05, which have been reproduced in *Table 0.4* of the *Compliance Matrix* above, refer Page i to vii of this CNMP.

2.3.2 *Noise Generating Activities & Equipment*

Construction activities and equipment with the potential to generate noise during the construction of the wind farm are listed (with quantities) in *Table 2.1* below.

Compliance Evaluation & Assessment

Noise emissions associated with these items are expected to achieve compliance with the noise management levels presented in *Chapter 5* of this CNMP during select works and activities conducted as part of the wind farm construction.

However, there will be select activities which occur for short to medium term periods, as part of the overall construction program, that are expected to exceed the noise management levels is documented in *Chapter 5*. This feature will be more prevalent when works are occurring near the closest and/or potentially most affected receptors situated within the area of influence of the site.

This is not uncommon for larger scale construction projects and some noise from construction is inevitable. Hence, suitable mitigation and management measures must be considered and implemented. This approach aligns with the purpose and objectives of the CNMP as outlined in *Chapter 1* and will assist to reduce noise levels and minimise impacts during the broader wind farms construction.

Table 2.1 Noise Generating Activities & Equipment

Equipment	Substation and Permanent Facility Site Preparation (Earthworks)	Substation and Permanent Facility Construction (Building Works)	WTG Site Preparation (Hardstand and foundation Earthworks)	WTG Construction (Installation of WTG)	Access Road Construction Works	Concrete Batching Plant Use	Client /EPC/BOP Contractor/s on site management	Cable trenching	WTG Service	Foundation steel and concrete works
Excavator	2	-	6	-	2	-	-	2	-	-
Grader	2	-	4	-	4	-	-	2	-	-
Dump Truck	2	-	12	-	8	-	-	3	-	-
Rock Breaker	1	-	2	-	1	-	-	1	-	-
Concrete Truck	-	6	-	-	-	14	-	-	-	-
Front End Loader	1	-	4	2	-	3	-	2	-	-
Crane	-	2	-	8	-	1	-	1	-	2
Bull Dozer	1	-	3	-	-	-	-	-	-	-
Concrete Batching Plant	-	1	-	-	-	1	-	-	-	-
Heavy Vehicles	3	3	4	10	2	4	-	3	-	2
Light Vehicles	8	8	2	30	8	10	20	8	6	8

2.3.3 *Site Layout and Locations of Works*

Wind farm infrastructure including the wind-turbine generators and roads will cover an area which constitutes approximately 2% of the overall wind farm site. The spatial extents of these project infrastructure and components is extensive, which is to be expected for a wind farm. Works and associated noise emissions are anticipated to occur most regularly at and near these locations, as identified in *Figure 2.3* above.

2.3.4 *Hours Of Work*

The majority of construction works are expected to occur during the daytime 'normal working hours' which are commonly adopted for significant construction projects in the State of Victoria, these standard work hours are:

Daytime (standard) work hours:

- Monday to Friday between 7AM and 6PM; and
- Saturdays between 7AM and 1PM.

Some construction works and activities will however require extended hours to fully complete the necessary tasks e.g. concrete pouring works. Other works and activities may also require some tasks to occur during the night time period e.g. heavy vehicle movements delivering larger-scale project equipment and infrastructure (turbine blades etc.) to minimise health and safety risks and/or to adhere to police requirements. This is common practice for the construction of wind farm projects and these specific activities are expected to occur during weekend or evening hours and during night-time hours, which are specified below.

Weekend / evening (non-standard) work hours:

- Monday to Friday between 6PM and 10PM;
- Saturdays between 1PM and 10PM; and
- Sundays and public holidays between 7AM and 10PM.

Night time (non-standard) work hours:

- Monday to Sunday between 10PM and 7AM.

Significant noise generating works will be managed to occur within daytime (standard/normal work hours) specified above however it is reiterated that a limited amount of works outside the standard hours will occur depending on logistical and safety requirements imposed by relevant consent or regulatory authorities. This CNMP has been established to consider and address these features so that impacts are suitably managed and mitigated, where considered feasible and reasonable and necessary to do so.

3 LEGISLATION & STATUTORY REQUIREMENTS

This section provides an overview of the legislative requirements and guidelines (and other reference documents) that were used to inform the preparation of this CNMP. A *Compliance Matrix*, which identified where each specific noise feature/requirement is addressed in this CNMP was provided in *Table 0.1 to Table 0.4*, refer Page i to vii.

3.1 PLANNING PERMIT CONDITIONS

Condition 38 of Permit No. 2015/23858 sets out the general requirements for the EMP.

Relevant to the CNMP is that it:

- must be generally in accordance with **Chapter 25** of the DDWF EES (June 2015); and
- must be in accordance with relevant EPA requirements and guidelines.

Chapter 25 of the DDWF EES is further discussed in *Section 3.2* below.

Condition 41 of the Planning Permit has specific regard to the requirement for a CNMP. It states:

'The environmental management plan must include a construction noise management plan. The construction noise management plan must include:

- a. performance requirements for noise at nearby receptors in accordance with EPA Publication 1254;*
- b. procedures for measuring compliance with performance requirements; and*
- c. procedures receiving, evaluation and responding to complaints'*

3.2 CHAPTER 25 OF THE DDWF EES

The Dundonnell Wind Farm - *EES Chapter 25: Environmental Management Framework* (EMF, 2015), prepared by Trustpower and dated June 2015 has regard to the Environmental Management Framework, and sets out the framework for the development of various EMP's as required by **Conditions 38 to 49** of the Planning Permit.

Table 25-10 of the EMF, 2015 (**Chapter 25**) has regard to noise and vibration, and sets out the objectives, and identifies a list of potential impacts and impact assessment outcomes, in relation to a construction noise management plan.

3.3 EPA PUBLICATION 1254

The State Government of Victoria - Environment Protection Authority (EPA) Victoria - *Noise Control Guidelines* (EPA Publication 1254), October 2008 has been adopted as the key technical reference for the preparation of the CNVMP.

The EPA Publication 1254 is general in nature and addresses many noise emission types e.g. fixed domestic plant and home occupation noise, or domestic refuse collection. Noise emissions associated with construction is specifically addressed in **Section 2** of EPA Publication 1254.

The full set of EPA Publication 1254 construction noise mitigation and management features/requirements were reproduced in the *Compliance Matrix* presented as *Table 0.1* to *Table 0.4* on Page i to vii of this CNMP.

3.4 RELEVANT COMPLIANCE STANDARDS

Other relevant technical standards that were referenced during the preparation of this CNMP include:

- Standards Australia AS1055-1997™ (AS 1055:1-3) - *Description and Measurement of Environmental Noise: Parts 1, 2 and 3.*
- Standards Australia AS IEC 61672.1-2004™ (AS 61672) - *Electro Acoustics - Sound Level Meters Specifications Monitoring* or Standards Australia AS1259.2-1990™ (AS 1259) - *Acoustics - Sound Level Meters - Integrating Averaging*, as applicable to the device.
- Standards Australia AS 2436-2010™ (AS 2436) - *Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites.*
- Standards Australia AS/IEC 60942:2004/IEC 60942:2003 (AS/IEC 60942) - *Australian Standard™ - Electroacoustics - Sound Calibrators.*

3.4.1 Other Reference Documents

Other relevant documents that were referenced during the preparation of this CNMP include

- Dundonnell Wind Farm - *Background Noise Monitoring* report (BNM, 2017), prepared by Sonus and dated November 2017.
- Dundonnell Wind Farm - *Environmental Management Plan* (EMP, 2018), prepared by Zenviron and cited June 2018.
- Dundonnell Wind Farm - *EES Noise Impact Assessment*, prepared by Marshall Day Acoustics (EES-NIA, 2014), dated 2 September 2014.

4 *EXISTING NOISE ENVIRONMENT*

This chapter describes the potentially sensitive noise receptors that have been identified in proximity to, and within the potential area of influence, of the wind farm site and the approach adopted to quantify existing noise levels representative of their location. This information was informed by review of the EES-NVIA, 2014 and in consultation with Zenviron / Tilt to assist ensure all applicable receptors are identified.

4.1 *POTENTIALLY SENSITIVE RECEPTORS*

The CNMP potentially sensitive noise receptors are described in *Table 4.1* and identified in Appendix M – *Figure 2: Constraints Plan – General* with respect to the various Project components and infrastructure which have been selected as the closest and/or potentially most affected (dwelling) locations situated in close proximity to construction aspects of the project.

These locations are considered to be representative of those that will experience the highest impacts associated with the wind farms construction, if any.

Table 4.1 *Potentially Sensitive Noise Receptors*

Receptor ID	GPS Co-ordinates (UTM, 55H) in metres		Receptor Status	Distance to Nearest Wind Turbine, metres	Nearest Wind Turbine, ID
	Easting	Northing			
1	669031	5806382	Participating Neighbour	729	T084
2	672687	5804696	Participating Landholder	789	T093
4	674211	5806127	Participating Neighbour	348	T068
5	673048	5798422	Local Landholder	5299	T101
6	670820	5798279	Local Landholder	5318	T101
8	676086	5801678	Local Landholder	3952	T087
9	677876	5801903	Local Landholder	4660	T087
10	680814	5799719	Local Landholder	8192	T070
12	681577	5801973	Local Landholder	6941	T043
13	681618	5802969	Local Landholder	6213	T043
14	682290	5804668	Local Landholder	5730	T043
15	682270	5805042	Local Landholder	5541	T043
17	679506	5804589	Local Landholder	3616	T043
18	680221	5807762	Local Landholder	2817	T031
19	680624	5810824	Local Landholder	3396	T002
20	679962	5810886	Local Landholder	2787	T002
21	676702	5812095	Local Landholder	2299	T002
22	677060	5814311	Local Landholder	4429	T002
23	677259	5815194	Local Landholder	5303	T002
24	677687	5816862	Local Landholder	6978	T002
25	672251	5815684	Local Landholder	5922	T001
26	670520	5815329	Local Landholder	6201	T001
27	668447	5813620	Local Landholder	6263	T019
28	667264	5813042	Local Landholder	6544	T025
29	663335	5808107	Participating Landholder	6680	T084
31	663707	5803686	Local Landholder	6497	T084
32	663040	5804034	Local Landholder	7006	T084
33	662584	5803912	Local Landholder	7478	T084
35	662500	5802258	Local Landholder	8200	T084
36	661643	5804320	Local Landholder	8281	T084
37	662917	5802114	Local Landholder	7908	T084

Receptor ID	GPS Co-ordinates (UTM, 55H) in metres		Receptor Status	Distance to Nearest Wind Turbine, metres	Nearest Wind Turbine, ID
	Easting	Northing			
39	666337	5803239	Participating Landholder	4460	T084
40	667859	5802265	Participating Neighbour	3994	T101
41	668315	5805431	Participating Landholder	1576	T084
42	672091	5801880	Local Landholder	1711	T101
43	672346	5801211	Local Landholder	2424	T101
44	673018	5801797	Local Landholder	2211	T101
46	673610	5803201	Participating Neighbour	1778	T097
47	674259	5804598	Participating Neighbour	997	T087
48	675852	5806811	Participating Landholder	257	T060
49	675515	5809154	Participating Landholder	1006	T013
50	676372	5810735	Participating Landholder	1127	T004
51	671667	5811042	Participating Landholder	2173	T001
52	671547	5811153	Participating Neighbour	2334	T001
55	673627	5816154	Local Landholder	6256	T001
56	666056	5811177	Participating Neighbour	6136	T063
57	664585	5809240	Participating Landholder	5996	T084
58	662781	5807078	Local Landholder	7002	T084
60	673688	5805517	Participating Landholder	677	T082
61	682427	5810972	Local Landholder	5182	T002
62	675853	5812054	Local Landholder	2537	T004
63	677018	5816534	Local Landholder	6650	T002
64	674257	5799633	Local Landholder	4692	T101
65	664009	5800534	Local Landholder	8006	T084
66	659271	5794818	Local Landholder	15136	T101
67	659128	5794722	Local Landholder	15308	T101
68	654047	5790668	Local Landholder	21800	T101
69	653387	5789716	Local Landholder	22898	T101
70	651395	5787972	Local Landholder	25540	T101
71	657660	5795091	Local Landholder	16336	T101
79	664474	5803487	Local Landholder	5881	T084
82	681278	5813870	Local Landholder	5585	T002

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4.1.1 *Existing Noise Environment*

A key element in assessing environmental noise impacts is an understanding of the existing ambient and background noise levels in the vicinity of the closest and/or potentially most affected receptors situated in proximity to the site.

The noise environment in the vicinity of Dundonnell Wind Farm receptors is best described as 'rural' i.e. an area with an acoustical environment that is dominated by natural sounds, having little or no road traffic. Such areas may include:

- an agricultural area, except those used for intensive agricultural activities;
- a rural recreational area such as resort areas;
- a wilderness area or national park; and
- an area generally characterised by low background noise levels (except in the immediate vicinity of industrial noise sources).

This area may be located in either a rural, rural-residential, environment protection zone or scenic protection zone, as defined on a council zoning map (i.e. Local Environmental Plan (LEP) or other planning instrument).

4.2 *MEASURED EXISTING NOISE LEVELS*

4.2.1 *EES-NIA, 2014 - Background Noise Monitoring*

As identified in **Chapter 2** of the EES-NIA, 2014 report background noise monitoring was undertaken between 25 January and 27 February 2013, before the proposed wind farm layout was finalised.

Six properties were selected for background noise monitoring based on their proximity to the proposed turbines at the time, these are reproduced in *Table 4.2* below.

Table 4.2 Background Noise Monitoring Locations (EES-NIA, 2014)

House	Easting (m)	Northing (m)	Nearest receiver
2 (PL)	672662	5804740	46 (PN) at 1.7km southeast
41 (PL)	668344	5805447	1 (PN) at 1.2km north east
48 (PL)*	675832	5806829	-
49 (PL)	675505	5809139	50 (PL) at 1.8km north
52 (PN)	671501	5811109	51 (PL) at 160m southeast
60 (PL)*	673735	5805482	47 (PN) at 1kmsouth

1. UTM WGS84 Zone 54 MGA 94.
2. (PL) Participating Landholder / (PN) Participating Neighbours.
3. * House will be removed if the project is approved.

The measured background noise levels have been plotted against the 110 metre (Above Ground Level, AGL) wind speeds as presented in **Sections E2** and **E3** of the EES-NIA, **Appendix E**.

These plots were adopted for the purposes of the EES-NIA and provide a characterisation of the ambient noise environment in the vicinity of the wind farm. An example of this data (House 2) is reproduced in *Figure 4.2* and *Figure 4.3* below.

Figure 4.1 Example (2014) – Background Noise Levels vs Wind Speeds

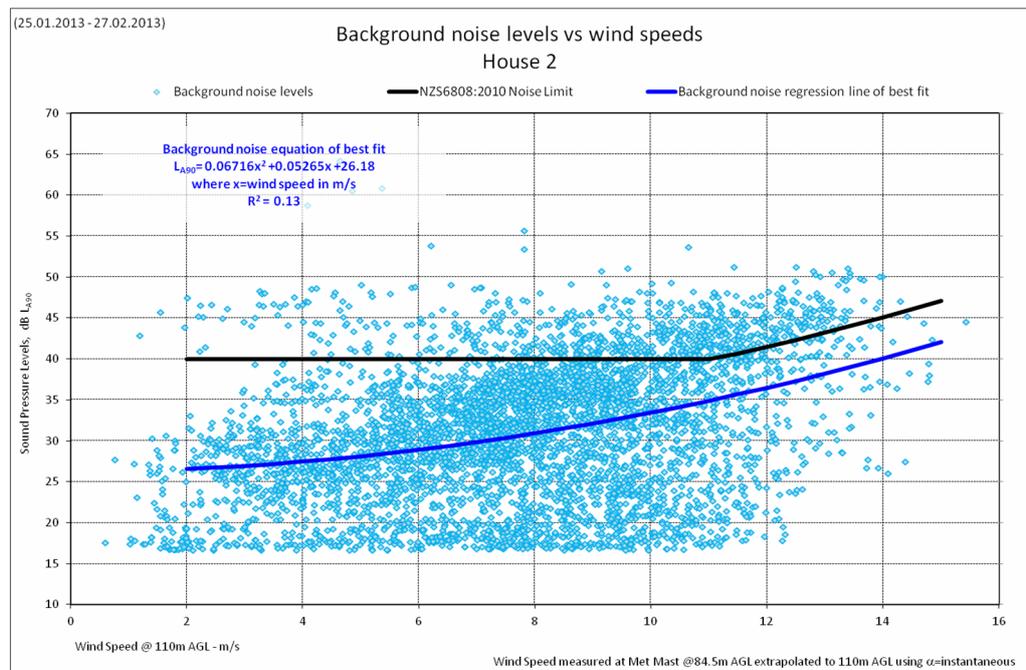
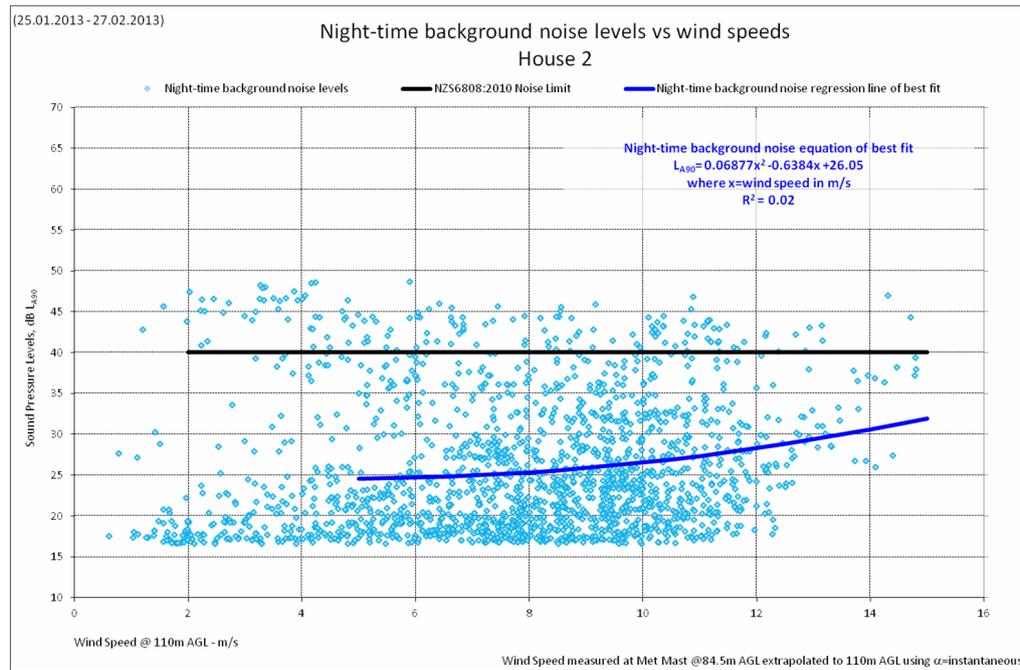


Figure 4.2 Example (2014) – Night-time Background Noise Levels vs Wind Speeds



A review of the EES-NIA, 2014, **Appendix E** dataset has identified that existing background noise levels (L90 in dBA) vary significantly depending on wind conditions of the area, as well as other influential environmental noise factors such wind-blown vegetation or animals etc.

A focused review of the measured existing background noise levels for wind speeds less than 5 m/s (above which the effects of wind on the microphone commonly impact noise data) has identified that daily (and night time) existing levels are commonly between 25 and 40 dBA, and in some cases are less than 20 dBA.

These review outcomes are consistent with the general discussion provided in **Section 11.3** of the EES-NIA, 2014, 2014 report which stated that “background noise levels have been measured below 20dB LA90 during the survey period detailed in Section 6.2 and therefore ...”.

4.2.2 BNM, 2017 – Background Noise Monitoring

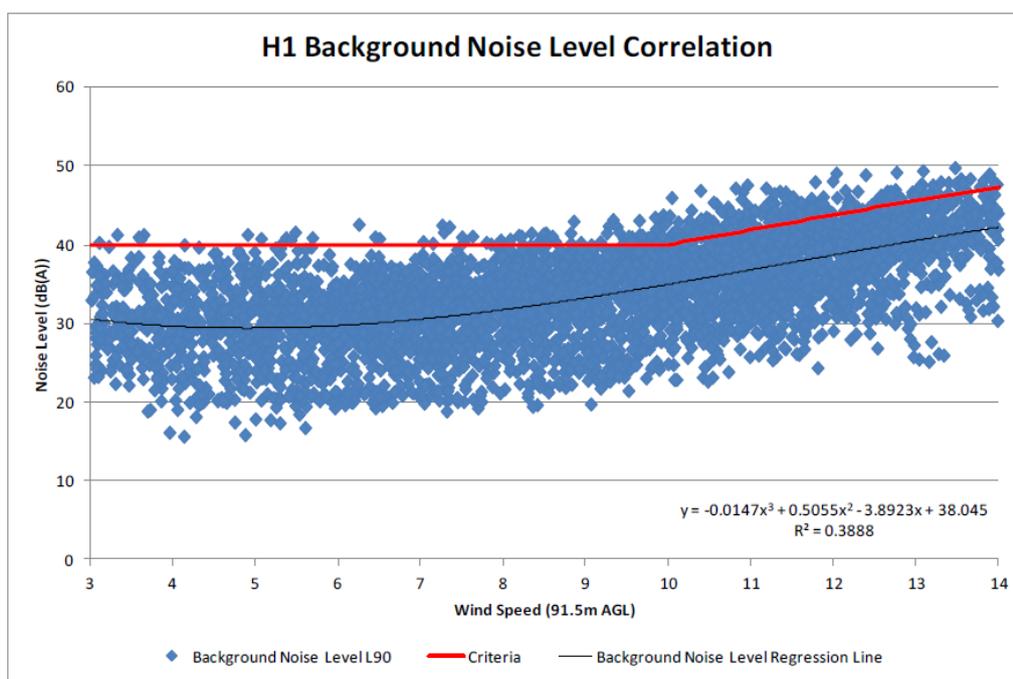
Background noise monitoring was conducted between 29 August and 11 October 2017 and the outcomes documented in the Dundonnell Wind Farm - Background Noise Monitoring report (BNM, 2017), prepared by Sonus and dated November 2017.

Noise monitoring was conducted at five locations and a monitoring methodology / data analysis approach consistent with that adopted for the EES-NIA, 2014, **Appendix E** monitoring applied.

Review of this data, to inform this CNMP, has again identified that existing background noise levels vary significantly depending on wind conditions of the area, as well as other implement shall environmental noise factors.

This review also concluded that daily existing background noise levels are commonly between 25 and 40 dBA for wind speeds less than 5 m/s. An example of this BNM, 2017 data (from H1) is reproduced in *Figure 4.4* below.

Figure 4.3 *Example (2017) – Background Noise Levels vs Wind Speeds*



4.2.3 CNMP Background Noise Levels

With the above features in mind it is clear that the majority of receptors near the wind farm experience very low existing background noise levels, for the majority of any given day, especially when calm or generally calm weather conditions are being experienced, e.g. <5m/s winds and no rainfall.

Although existing background noise levels vary from receptor to receptor there is a general alignment for the majority of those receptors under calm or generally calm weather conditions, where these very low existing background noise levels are already experienced.

It is also clear that night time noise levels are reduced when compared to the 24-hour noise levels documented in the EES-NIA, 2014 report. Although not documented in the EES-NIA, 2014 report data (24-hour and night time data only was provided, which is common practice for a wind farm noise assessment report), evening noise levels are typically elevated when compared to that of the night time and daytime noise levels are typically elevated when compared to that of the evening.

As per EPA Publication 1254 noise criteria need to be derived for both the evening and night time periods and hence further guidance has been taken from Standards Australia AS1055-1997™ (AS 1055:3) – *Description and Measurement of Environmental Noise: Part 3* to quantify representative background noise levels for each period of the day i.e. daytime, evening and night time that can be adopted at all receptors considered in this CNMP.

There is no requirement in EPA Publication 1254 to quantify daytime background noise levels however a representative value has been provided in this CNMP as a general reference.

These existing background noise levels, as presented in *Table 4.3* below are adopted here for all receptors and are applied in *Chapter 5* of this report to derive the applicable evening and night time construction noise management levels.

This approach, where a single background noise level dataset is adopted for all receptors (rather than specific values for each individual receptor) is the preferred method as it assists to simplify and focus any future noise compliance evaluation. It is reasonable to adopt this approach as very low noise levels were measured at most receptors.

Table 4.4 *Background Noise Levels*

Receptor Name	GPS Co-ordinates (UTM, 55H) in metres		Background Noise Level, in dBA		
	Easting	Easting	Daytime	Evening	Night time
1 to 82	Various: refer <i>Table 4.1</i> and <i>Figure 4.1</i>		35	35	30

5 NOISE MANAGEMENT LEVELS

This chapter presents the project-specific construction noise management and construction road traffic noise management levels that will be adopted to evaluate potential emissions and associated impacts as described in this CNMP.

5.1 CONSTRUCTION NOISE MANAGEMENT LEVELS

The following project-specific construction noise management levels were derived for each potentially sensitive noise receptor with due regard to EPA Publication 1254 and the existing noise levels presented in *Chapter 4* above.

For the daytime period i.e. between 7AM and 6PM Monday to Friday, and between 7AM and 1PM Saturdays, noise management levels do not apply unless the work is conducted outside the normal/standard hours i.e. weekends between 1PM and 6PM Saturdays, and 7AM and 6PM Sundays and public holidays.

For the weekend daytime (noted above) and evening period the noise level at any residential premises will not exceed the background noise by 10 dBA or more for up to 18 months after project commencement, or 5 dBA or more after 18 months. For the evening period these management levels apply during the hours of 6PM to 10PM Monday to Friday, and then 6PM to 10PM Saturdays, Sundays and public holidays.

For the night time period EPA Publication 1254 specifies that during the night time period i.e. 10PM to 7AM, seven days per week, construction noise must be inaudible within a habitable room of any residential premises. It is not usually practical to gain access for evaluating this requirement hence, an external noise level equivalent (35 dBA) has been derived, which equates to an internal noise level of 25 dBA, allowing for a reduction of 10 dBA (external to internal) which is anticipated for a normal building with windows partially open. This external level is broadly consistent with the EPA Publication 1254 background + 5 dBA requirement specified for the evening period.

All project-specific construction noise management levels are identified in *Table 5.1* for works up to 18 months after project commencement and in *Table 5.2* for works after 18 months from project commencement. All noise level values is expressed as the $L_{eq, 15}$ minute parameter in dBA.

Project-Specific Construction Noise Management Levels (Works ≤ 18 Months)

Receptor Name	GPS Co-ordinates (UTM, 55H) in meters		Construction Noise Management Level Leq, 15 minute in dBA		
	Easting	Easting	Daytime ¹	Evening ²	Night time ³
1 to 82	Various: refer <i>Table 4.1</i> and <i>Figure 4.1</i>		45	45	35

- Does not apply between 7AM and 6PM Monday to Friday, and 7AM and 1PM Saturdays. Applies to daytime weekend works i.e. 1PM to 6PM Saturdays, and 7AM to 6PM Sundays and public holidays.
- Applies 6PM to 10PM Monday to Friday, 6PM to 10PM Saturdays, Sundays and public holidays.
- Applies 10PM to 7AM, seven days per week.

Table 5.2 Project-Specific Construction Noise Management Levels (Works > 18 Months)

Receptor Name	GPS Co-ordinates (UTM, 55H)		Construction Noise Management Level Leq, 15 minute in dBA		
	Easting	Easting	Daytime ¹	Evening ²	Night time ³
1 to 82	Various: refer <i>Table 4.1</i> and <i>Figure 4.1</i>		40	40	35

- Does not apply between 7AM and 6PM Monday to Friday, and 7AM and 1PM Saturdays. Applies to daytime weekend works i.e. 1PM to 6PM Saturdays, and 7AM to 6PM Sundays and public holidays.
- Applies 6PM to 10PM Monday to Friday, 6PM to 10PM Saturdays, Sundays and public holidays.
- Applies 10PM to 7AM, seven days per week.

5.2 CONSTRUCTION ROAD TRAFFIC MANAGEMENT LEVELS

The project-specific construction road traffic noise management levels have been adopted directly from the EES-NIA, 2014 report and are considered appropriate for re-use in this CNMP.

Unlike the values derived for general construction the road traffic values are fixed levels and do not rely on the existing values presented in *Chapter 3* of this CNMP. They do however apply to the overall road traffic noise rather than that directly attributable to the wind farms construction transportation emission.

The EES-NIA, 2014 also specified that traffic arising from the development should not be permitted to increase existing noise levels (on existing freeways, arterial and sub arterial roads) by more than 12dBA (Leq) averaged over the relevant time period (day or night); hence this is reflected in the management levels tabulated below.

All project-specific construction road traffic noise management levels are identified in *Table 5.3* and each value is expressed as either the Leq, 15 hour, Leq, 9 hour or Leq, 1 hour noise level parameter (in dBA) depending on the time-of-day / assessment period.

It is noted that these management levels apply during daytime (7AM to 10PM) and night time (10PM to 7AM) periods and the hours vary when compared to those specified by EPA Publication 1254 i.e. only no evening is specified.

Table 5.3 Project-Specific Construction Road Traffic Noise Management Levels

Type of road	Construction Road Traffic Noise Management Levels in dBA	
	Daytime	Night time
Existing freeways, arterial and sub arterial roads	Leq, 15 hour ≤ 60 dBA	Leq, 9 hour ≤ 55 dBA
	Existing Road Traffic Noise (Leq) + 12 dBA	
Existing local roads	Leq, 1 hour ≤ 55 dBA	Leq, 1 hour ≤ 50 dBA

Guidance Note

It is noted that the EES-NIA, 2014 identified a road traffic noise level (Leq, 1 hour) for Woorndoo-Streatham Road of 54 dBA. This value (+12 dBA = 66 dBA) will be adopted as the supplementary management level where needed to evaluate noise from construction road traffic on any existing freeways, arterial and sub arterial roads management level.

ENVIRONMENTAL MANAGEMENT & MITIGATION

This chapter describes the overall approach to mitigating and managing noise levels and impacts as a result of the DDWF construction works. The measures presented in this section are based on achieving all items specified by Permit No.: 2015/23858 and EPA Publication 1254, as presented in the CNMP *Compliance Matrix*, refer Page i to vii.

These measures are focused on non-participating landholders or neighbours only, however they will be implemented for involved parties where needed.

In all cases, the actual set of noise mitigation and management measures will be selected on a case-by-case basis, with regard to the actual activity or task being undertaken and its proximity to nearby receptors.

These measures will not be implemented in all construction circumstances and for all components of the projects construction is in some cases impacts to receptors will not occur due to their distance offset from the works being undertaken. Furthermore these measures will be selected following an evaluation of their feasibility and reasonableness, as defined in *Chapter 1* of this CNMP.

6.1

NOTIFICATIONS

All potentially sensitive receptors within the area of influence of project construction works or activities being undertaken i.e. noise-affected neighbours, will be informed in writing (letter or email) about the nature of construction stages and noise reduction measures. When noisier works are anticipated near a receptor early notice will be provided.

The notifications identified above will describe the activities and how long they are expected to take, nominate a principal contact person for community queries. Provide 24-hour contact details will be provided, these will also be posted on site signage. These notified receptors will be kept informed of construction progress where that differs to the schedule already provided.

Receptors that may be affected by a) unavoidable works, b) works that cannot practicably meet the normal/standard hours for construction because the work involves continuous work – such as a concrete pour – or c) works that would otherwise pose an unacceptable risk to life or property, or risk a major traffic hazard will be specifically notified of the intended work, its duration and times of occurrence.

As part of the approvals pathway and implementation of this CNMP, the construction contractor will contact and seek consent from the relevant authority for the works required outside the normal/standard hours, focusing of evening and night periods where people's sensitivity to truck and haulage noise may be heightened.

6.2 HOURS OF WORKS

The majority of construction works are expected to occur during the daytime normal working hours which are commonly adopted for significant construction projects in the State of Victoria, these standard work hours are:

Daytime (standard) work hours:

- Monday to Friday between 7AM and 6PM; and
- Saturdays between 7AM and 1PM.

Significant noise generating works will be managed to occur within daytime (standard/normal work hours) specified above however it is reiterated that a limited amount of works outside the standard hours will occur depending on logistical and safety requirements imposed by relevant consent or regulatory authorities.

As stated above in *Section 6.1*, the construction contractor will contact and seek consent from the local authority for low-noise and managed-impact works that are required outside the normal/standard hours, focusing on evening and night periods where people's sensitivity to construction noise emissions may be heightened.

These works will be inherently quiet or unobtrusive, or noise impacts will be mitigated and managed through actions specified in this CNMP supported where needed by the existing EES-NIA, 2014 and/or an acoustics specialist. These works will be either low-noise or managed-impact works and will not feature intrusive characteristics such as impulsive noise or tonal movement alarms.

6.3 NOISE REDUCING MEASURES

The following project-specific mitigation measures will be implemented to minimise impacts as far as is feasible and reasonable, with a focus on any activities required outside the normal hours specified for construction:

- Extended periods of high noise level generating plant, equipment or machinery (excavators, hand tools, grinders etc.) or activities will be avoided.
- Any site buildings, equipment or other useful obstacles/objects will be positioned to act as a temporary barrier to minimise noise emissions towards the residential receptors situated the project. Other barriers such as hoardings or temporary enclosures will also be considered.
- The site will be proactively managed to avoid plant, equipment or machinery being clustered together near receptors.

- The site will be orientated to minimise the need for reversing of equipment or vehicles, particularly during any out-of-hours work. Furthermore, less noisy movement/reversing warning systems for equipment and vehicles will be considered, especially if they will operate for extended periods or in close proximity to the most affected receptors. Occupational health and safety requirements for use of warning systems must be followed.
- All mechanical plant and equipment will be selected to be as quiet as possible and provide lower noise emitting construction methods where feasible and reasonable.
- All mechanical plant and equipment (especially all pneumatic tools operated near a residential area) will be silenced by the best practical means using current technology e.g. effective silencer on their air exhaust port. Mechanical plant, including noise-suppression devices, will be maintained to the manufacturer's specifications. Internal combustion engines are to be fitted with a suitable muffler in good repair.
- All plant, equipment or machinery (and heavy vehicles, trucks etc.) will be turned off when not being used.

6.3.1

Construction Road Traffic

To manage potential impacts of construction road traffic noise the following good practice transportation mitigation and management measures will be implemented:

- Trucking companies and/or drivers will be informed of the designated vehicle routes, parking locations, acceptable delivery hours.
- Truck drivers will be instructed to travel through local roads without stopping unless absolutely necessary. If for whatever reason, truck drivers need to stop on local roads they will position the vehicle away from residential dwellings and limit extended periods of engine idling.
- Truck drivers will be instructed to limit engine revving and use of exhaust brakes when travelling to and from site, especially whilst travelling on local roads.
- Loading and unloading of materials/deliveries will occur as far as possible from receptors. Dedicated loading/unloading areas to be shielded if close to receptors, and delivery vehicles will be fitted with straps rather than chains for unloading.
- Any unsatisfactory noise performance for specific vehicles and/or the operators will be dealt with on a case-by-case basis.

In general, vehicular movements to and from the site will only occur during the scheduled normal working hours, however the construction contractor will seek approval from the relevant authority for heavy vehicle movements required outside the normal/standard hours, focusing on evening and night periods where peoples sensitivity to truck and haulage noise may be heightened.

6.4 PROVISIONS AND SAFEGUARDS

The noise mitigation and management measures outlined in *Section 6.3* will work in tandem with the notification commitments stated in *Section 6.1* and construction hours identified in *Section 6.2* of this CNMP.

Impacts may not be reduced to negligible levels for all receptors during all construction activities; however these measures are designed to ensure that any residual impacts are minimised as far as is practically achievable. These measures focus on minimising construction noise impacts, rather than only on achieving numeric values such as the noise management levels presented in this CNMP.

This CNMP has however provided a number of applicable provisions and safeguards, such as commitments to noise monitoring, training and awareness, inquiries and complaints management and administrative tasks associated with maintaining this CNMP is an active instrument for the mitigation and management of noise.

These features are outlined in *Chapter 8* of this CNMP with due regard to the broader Dundonnell Wind Farm - *Environmental Management Plan* (EMP, 2018), prepared by Zenviron and dated June 2018.

NOISE MONITORING

Construction noise monitoring for works and activities associated with the Dundonnell Wind Farm will be conducted:

- To validate any noise complaints, in support of the *Complaints Management Plan and Complaints Handling Procedure* presented in **Section 6.6** of the DDWF EMP.
- To verify the effectiveness of any additional noise reducing mitigation measures that occur during the project.
- During any construction works which are necessary during the night time period.

The purpose of the monitoring is to inform the relevant personnel when the noise management levels have been exceeded so that additional management measures may be implemented, where feasible and reasonable.

Existing Background Noise Levels: the existing noise environment has already been quantified (via measurement) at the closest and/or potentially most affected noise sensitive receptors situated within the potential area of influence of the wind farms construction.

This is summarised in *Chapter 4* of this CNMP with due regard to the data and information presented in the EES-NIA, 2014.

No further baseline noise monitoring to establish existing noise levels beyond those presented in this CNMP is considered warranted or proposed at this stage. However additional baseline noise monitoring may be conducted in the future specific circumstances are identified that necessitate the additional monitoring to occur.

Should this additional baseline noise monitoring become a requirement for the Project a suitable scope of works would be developed for the measurement, analysis and reporting of the data.

7.1

GENERAL MEASUREMENT REQUIREMENTS

Where noise monitoring is required, short-term attended noise measurements will be conducted by an operator using a hand held Type 1 or Type 2 'integrating-averaging' sound level meter. The device will be calibrated prior to and after all measurement rounds, with any change in calibration levels noted.

Measurements will be completed with the sound level meter mounted to a tripod and with a windscreen fitted. Instantaneous noise levels for all noted noise emission sources (extraneous or otherwise), meteorological conditions (average and maximum wind speeds, temperature, precipitation and cloud cover etc.) shall be recorded during all measurements. The field sheet provided in *Annex B* of this CNMP will be used.

The location of the monitoring, time of measurement and all relevant measurement parameters (e.g. L_{eq} , L_{min} , L_{max} , L_1 , L_{10} and L_{90} in dBA) will be recorded, as well as the site activities that were occurring at the time the measurements were conducted. Site activity records will be maintained during any noise monitoring events.

Noise monitoring will not occur within 3 metres of any reflective structure or wall, if possible. Where it is not possible to measure more than 3 metres from a reflective structure or wall, a reduction of up to 2.5 dBA will be applied to the measured ambient and site noise contribution to account for the likely increase in noise associated with reflective surfaces.

Noise monitoring will not be conducted during periods where wind speeds exceed 5 m/s at the microphone or during any rain events.

Monitoring will be conducted as per the requirements of this CNMP and with due regard to AS1055; AS61672, AS1259 (or similar); or IEC60942 as relevant to the monitoring being conducted and equipment used.

All noise measurements will be a 15 minutes duration and the data will be recorded using the “fast” time response of the sound level meter.

7.1.1 *Noise Monitoring in the Community*

Noise monitoring will be conducted at the affected receptor(s) or a nominated representative location, typically the nearest receptor where more than one receptor have been identified. Monitoring will be in the form of short-term operator attended noise measurements but longer-term unattended noise monitoring may be considered where appropriate e.g. road traffic noise levels need to be measured.

The site noise level contribution (L_{eq} , 15 minute for general construction noise and L_{eq} , 15 hour, L_{eq} , 9 hour Or L_{eq} , 1 hour for road traffic noise) shall be determined in the absence of any influential source not associated with the construction works for direct comparison to the relevant management levels.

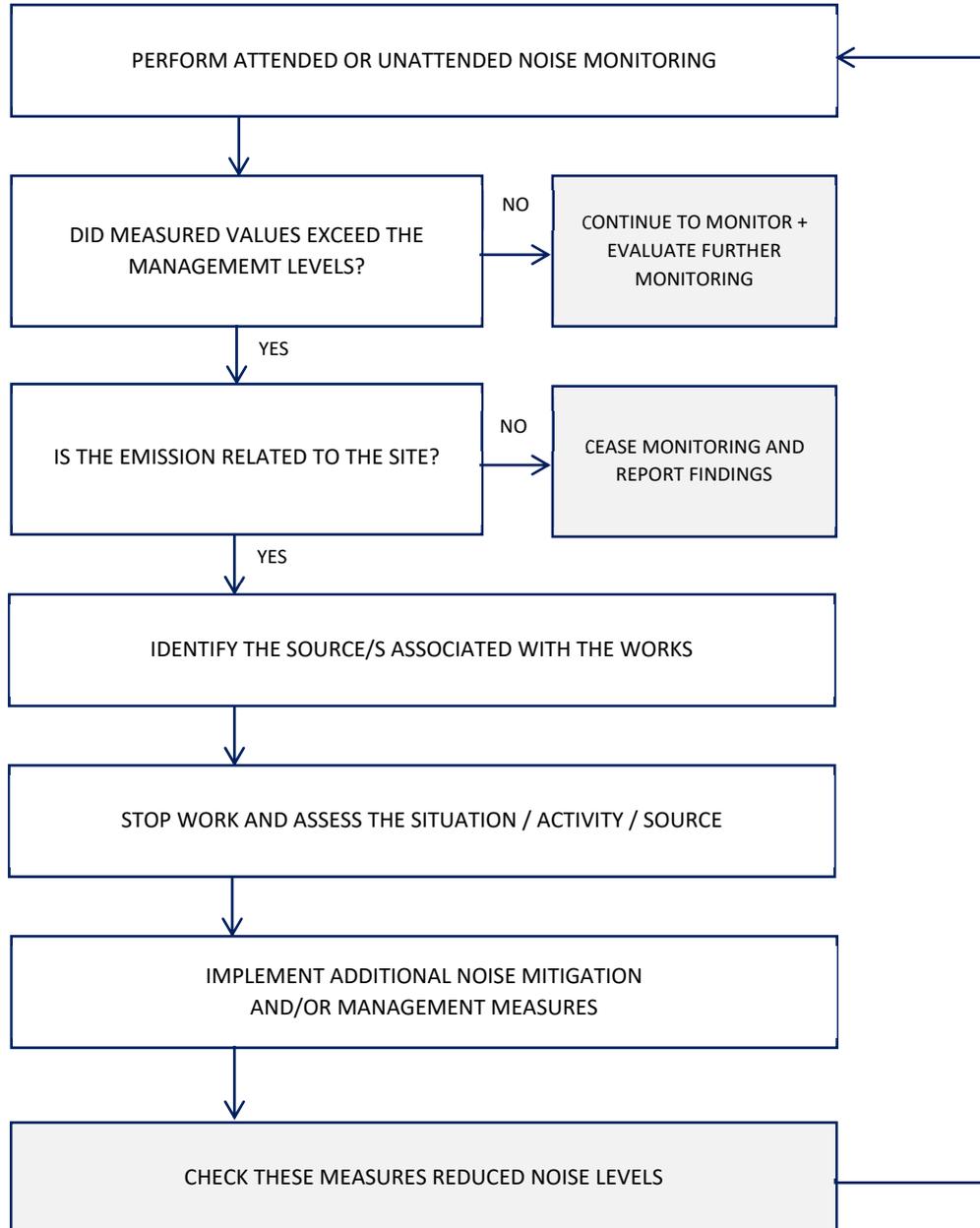
If community noise monitoring identifies that measured noise levels are above the noise management levels the construction contractor will revisit construction practices, methods and sequencing etc. in order to reduce noise levels, minimise impacts and to enable provision of information on noise levels to surrounding and potentially affected residents should this be required (i.e. on request or following a complaint).

Where night time works are required and justified, attended noise measurements will be conducted at the most affected receptors following the general and community monitoring requirements specified above.

7.1.2 *Actions Following Monitoring in the Community*

Actions to mitigate or manage noise emissions will be considered as per the measures described in this CNMP and the overall monitoring protocol identified in *Figure 7.1* below.

Figure 7.1 Monitoring and Action Protocol



7.2

NOISE MONITORING REPORTING

All noise monitoring results will be assessed against the noise management levels identified in this CNMP. Noise monitoring reporting will be conducted within three business days of the data being analysed and distributed to relevant personnel.

The following will be included as a minimum (where relevant) in the noise monitoring reports:

- The reason and type of monitoring conducted e.g. short-term attended noise measurements, following a complaint.
- A brief statement of the measurement method and description of the instrumentation used.
- The noise management levels that apply at the receptor for that time of day.
- Descriptions of the affected receptor/s or, in the case of complaints, description of the complainant location and complaint. The location of the construction works in relation to the monitoring position will be recorded (hand sketched map, aerial imagery and/or photos etc.).
- The results of monitoring at each location, including a comparison the measured site noise level contribution within noise management levels presented in this CNMP.
- Details of the meteorological conditions i.e. temperature, humidity, cloud cover, and wind speed and direction recorded at the time the measurement was completed.
- A tabulated summary of the measured levels complying with and exceeding the management levels and a description/s of the plant, equipment and/or machinery in use, or activities undertaken causing these exceedances.
- A clear statement outlining the projects compliance or non-compliance with the noise management levels. The reasons for non-compliance will be stated, strategies for minimising noise identified and stated, and the appropriate actions to implement the mitigation and or management strategies identified.

OTHER MANAGEMENT PLAN REQUIREMENTS

This chapter summarises any other management plan features or requirements as relevant to noise.

The broader Dundonnell Wind Farm - *Environmental Management Plan* (EMP, 2018), prepared by Zenviron and dated June 2018 has been prepared for the Project and has specific requirements relevant to enquiries and complaints, communications, monitoring and review of environmental management practices and plans, roles and responsibilities and training/continual improvement.

These sections are referenced (but not reproduced) where relevant to this CNMP and any additional requirements outlined herein.

8.1

ENQUIRIES & COMPLAINTS MANAGEMENT

Inquiries and complaints will be managed via the EMP, 2018 specifically through the *Complaints Management Plan and Complaints Handling Procedure*, refer to **Section 6.6** of that plan.

The procedure for reporting and responding to complaints is detailed below:

- All complaints received must be recorded in the Tilt Renewables' Incident Management System (Complaints Handling Register). The appropriate Business Unit Manager will have responsibility for ensuring that the register is maintained and located in a central location accessible to all relevant personnel.
- The contact details of the complainant should include:
 - Name;
 - Address;
 - Telephone numbers (home, work and mobile); and
 - Email Address.
- Details of the complaint to be recorded should include:
 - Dundonnell Wind Farm allocated dwelling no. (if relevant);
 - why the complaint is being made / details;
 - when the complaint was first made (time and date);
 - method of contact;
 - who received the complaint;
 - complaint handling owner;
 - any particular personnel the complaint s about (if relevant);
 - what action the complainant would like taken to see the matter put right;

- date of response and immediate actions;
- allocated complaints number shall be to each complaint; and
- attach any copies of correspondence relating to the complaint.
- All complainants will be notified within 24 hours of receipt of a complaint if the complaint is not made verbally;
- All complainants shall receive acknowledgement in writing or via email of the complaint with a reference number and details of how the Proponent proposes to handle the complaint;
- All complaints are to be acknowledged within two business days and to discuss next steps in handling the complaint, including provision of the contact details of the person that will be handling the complaint. Emergency complaints will be escalated in line with Tilt Renewables' Emergency Management Process;
- A complaint will be internally assessed and allocated to an appropriate staff member within the department related to the complaint. The assigned person will review all relevant information and may contact the complainant to discuss the matter;
- Complaints will be treated confidentially and in accordance with Tilt Renewables' Privacy Policy. Personal details will only be provided to another organization or persons outside of the company if the complainant agrees;
- Other parties that are relevant to the complaint may be contacted to assess their willingness to cooperate to resolve the complaint. The third parties could be, but are not limited to, external contractors and consultants, neighboring residents, Councils or internal personnel;
- All complaints are to be investigated and responded to within 7 days. If more time is needed, the complainant will be notified before the end of this period and provided an update of expected timeframes;
- The complainant will be provided with an update on the status of the complaint at regular intervals (at least every 10 working days) until it is resolved or closed;
- Business Unit Management may review the outcomes of investigations and internal assessments of complaints managed by front line staff;
- If the complainant is unhappy with the way a complaint is being dealt with or the proposed resolution, the complaint will then be escalated; and
- In addition to the above, the RD/AM is responsible for ensuring the appropriate regulatory authorities are notified of any complaints which relate to a potential non-compliance.

Complaints will be brought to closure for any of the below reasons:

- Confirmation received from the complainant that a satisfactory outcome has been achieved;
- Despite best efforts, a satisfactory resolution has not been achieved and it is considered that further time and effort in handling the complaint will not assist with reaching a resolution;
- The complainant advises that they no longer wish to pursue the complaint, or
- Despite best efforts, the complainant cannot be contacted to discuss the complaint.

When a complaint is closed the Complaints Handling Register will be updated.

8.1.1

Communications

Various lines of communication will be made available for enquiries and complaints during construction of the project with suitably qualified or experienced personnel made available to manage and respond. These lines of communication are documented in multiple chapters and sections of the EMP, 2018 and are considered suitable for the effective communication of potential noise issues, associated mitigation and subsequent management actions.

8.2 *MONITORING & REVIEW*

Monitoring and review of this CNMP will be managed via the EMP, 2018 specifically through the *EMP Review* requirements, refer **Chapter 7** of that plan.

The type of circumstances that may trigger a CNMP review could include, but are not limited to, significant changes in construction procedures, management protocols or environmental requirements; or trends in validated noise complaints being identified; and/or a significant increase in noise impacts to those already anticipated.

In these circumstances the following steps will be completed:

- Review and identify the cause of any elevated noise levels or noise levels exceeding the management levels presented in this CNMP. This will focus on the plant, equipment or machinery in use at the time, or activities undertaken so that any trends can be identified;
- Confirm the type, extent and effectiveness of any mitigation or corrective actions already implemented during the noise events that gave rise to the CNMP review.
- Identify, develop and implement any opportunities for improvement or additional mitigation or management measures that will assist to minimise impacts associated with any trends.
- Revise this CNMP document, or supplement this plan (e.g. with separate work instructions) to reflect the outcomes of the review.

The revised CNMP (or supplementary documentation) will be developed as per the *EMP Review* requirements, stated in **Chapter 7** of the EMP, 2018 so that the overall environmental management strategy and noise-specific measures continue to assist to minimise impacts at receptors and assist to ensure that the CNMP remains an effective instrument for the management and mitigation of construction noise.

8.3 *ROLES & RESPONSIBILITIES*

Various roles and responsibilities have been assigned to Project construction personnel, as documented in **Chapter 8** of the EMP, 2018. These roles and responsibilities are considered normal the type and scale of construction that is to occur and are considered suitable for the effective management of potential noise issues, associated mitigation and subsequent actions.

8.4

TRAINING & CONTINUOUS IMPROVEMENT

Chapter 9 of the EMP, 2018 outlines the three main forms of training considered appropriate in ensuring the health and safety of workers and the environment during construction and operation of the project.

Noise training will be provided as part of the normal construction management practices implemented by the construction contractor, as part of the wind farms induction process and as part of day-to-day works planning.

All site personnel, contractors and sub-contractors shall undergo the project-specific induction training, which will include noise management training and awareness features developed with an emphasis on understanding and minimising impacts from the work and activities being undertaken.

Training relating to noise will be managed in accordance with **Chapter 9** of the EMP, 2018 and in general will occur during inductions or toolbox meetings, with the following noise features being addressed on a case-by-case basis:

- The location of potentially sensitive receptors.
- Approved site hours of work i.e. the permissible hours of work, including deliveries.
- Relevant noise mitigation and management measures, and any limitations on high noise generating activities.
- Construction employee parking areas, designated loading and unloading areas and procedures.
- Details of the complaints handling procedure.
- Details of the environmental incident procedures.
- Consequences of not complying with these measures.

Personnel directly involved in a) implementing the noise training and/or b) implementing any measures on site will be suitably qualified and experienced, or given specific training on these CNMP features.

Records of all training will be filed in accordance with **Chapter 9** of the EMP, 2018 and normal construction management practices implemented by the construction contractor.

REFERENCES

Dundonnell Wind Farm - **Background Noise Monitoring** report (BNM, 2017), prepared by Sonus and dated November 2017

Dundonnell Wind Farm - **EES Chapter 25: Environmental Management Framework** (EMF, 2015), prepared by Trustpower and dated June 2015

Dundonnell Wind Farm - **EES Noise Impact Assessment**, prepared by Marshall Day Acoustics (EES-NIA, 2014), dated 2 September 2014

Dundonnell Wind Farm - **Environmental Management Plan (EMP, 2018)**, prepared by Zenviron and dated June 2018

Planning and Environment Regulations 2015 - Section 97F - Form 11 - **Planning Permit Granted by the Minister Under Section 97F of the Planning and Environment Act 1987**, Permit No.: 2015/23858

Standards Australia AS1055-1997™ (AS 1055:1-3) - **Description and Measurement of Environmental Noise: Parts 1, 2 and 3**

Standards Australia AS IEC 61672.1-2004™ (AS 61672) - **Electro Acoustics - Sound Level Meters Specifications Monitoring** or Standards Australia AS1259.2-1990™ (AS 1259) - **Acoustics - Sound Level Meters - Integrating Averaging**, as applicable to the device.

Standards Australia AS 2436-2010™ (AS 2436) - **Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites**

Standards Australia AS/IEC 60942:2004/IEC 60942:2003 (AS/IEC 60942) - Australian Standard™ - **Electroacoustics - Sound Calibrators**

State Government of Victoria - Environment Protection Authority (EPA) Victoria - **Noise Control Guidelines** (EPA Publication 1254), October 2008

Annex A

Acoustics Glossary

A.1 GLOSSARY – ACOUSTICAL CONCEPTS AND TERMINOLOGY

A.1.1 *What Is Noise and Vibration?*

Noise

Noise is often defined as a sound, especially one that is loud or unpleasant or that causes disturbance¹ or simply as unwanted sound, but technically, noise is the perception of a series of compressions and rarefactions above and below normal atmospheric pressure.

Vibration

Vibration refers to the oscillating movement of any object. In a sense noise is the movement of air particles and is essentially vibration, though in regards to an environmental assessment vibration is typically taken to refer to the oscillation of a solid object(s). The impact of noise on objects can lead to vibration of the object, or vibration can be experienced by direct transmission through the ground, this is known as ground-borne vibration.

Essentially, noise can be described as what a person hears, and vibration as what they feel.

A.1.2 *What Factors Contribute To Environmental Noise?*

The noise from an activity, like construction works, at any location can be affected by a number of factors, the most significant being:

- How loud the activity is?
- How far away the activity is from the receiver?
- What type of ground is between the activity and the receiver location e.g. concrete, grass, water or sand?
- How the ground topography varies between the activity and the receiver? For example, is it flat, hilly, mountainous? Blocking the line of sight to a noise source will generally reduce the level of noise.
- Any other obstacles that block the line of sight between the source to receiver e.g. buildings or purpose built noise walls.

¹ Copyright © 2011 Oxford University Press

A.1.3 *How to Measure and Describe Noise?*

Noise is measured using a specially designed 'sound level' meter which must meet internationally recognised performance standards. Audible sound pressure levels vary across a range of 10^7 Pascals (Pa), from the threshold of hearing at $20\mu\text{Pa}$ to the threshold of pain at 200Pa . Scientists have defined a statistically described logarithmic scale called Decibels (dB) to more manageably describe noise.

To demonstrate how this scale works, the following points give an indication of how the noise levels and differences are perceived by an average person:

- 0 dB - represents the threshold of human hearing (for a young person with ears in good condition).
- 50 dB - represents average conversation.
- 70 dB - represents average street noise, local traffic etc.
- 90 dB - represents the noise inside an industrial premises or factory.
- 140 dB - represents the threshold of pain - the point at which permanent hearing damage may occur.

A.1.4 *Human Response to Changes in Noise Levels*

The following concepts offer qualitative guidance in respect of the average response to changes in noise levels:

- Differences in noise levels of less than approximately 2 dB are generally imperceptible in practice, an increase of 2 dB is hardly perceivable.
- Differences in noise levels of around 5 dB are considered to be significant.
- Differences in noise levels of around 10 dB are generally perceived to be a doubling (or halving) of the perceived loudness of the noise. An increase of 10 dB is perceived as twice as loud. Therefore an increase of 20 dB is four times as loud and an increase of 30 dB is eight times as loud etc.
- The addition of two identical noise levels will increase the dB level by about 3 dB. For example, if one car is idling at 40 dB and then another identical car starts idling next to it, the total dB level will be about 43 dB.
- The addition of a second noise level of similar character which is at least 8 dB lower than the existing noise level will not add significantly to the overall dB level.

- A doubling of the distance between a noise source and a receiver results approximately in a 3 dB decrease for a line source (for example, vehicles travelling on a road) and a 6 dB decrease for a point source (for example, the idling car discussed above).
- A doubling of traffic volume for a line source results approximately in a 3 dB increase in noise, halving the traffic volume for a line source results approximately in a 3 dB decrease in noise.

A.1.5 *Terms to Describe the Perception of Noise*

The following terms offer quantitative and qualitative guidance in respect of the audibility of a noise source:

- **Inaudible / Not Audible** - the noise source and/or event could not be heard by the operator, masked by extraneous noise sources not associated with the source. If a noise source is 'inaudible' its noise level may be quantified as being less than the measured LA90 background noise level, potentially by 10 dB or greater.
- **Barely Audible** - the noise source and/or event are difficult to define by the operator, typically masked by extraneous noise sources not associated with the source. If a source is 'barely audible' its noise level may be quantified as being 5 - 7 dB below the measured LA90 or LAeq noise level, depending on the nature of the source e.g. constant or intermittent.
- **Just Audible** - the noise source and/or event may be defined by the operator. However there are a number of extraneous noise sources contributing to the measurement. The noise level will be quantified based on instantaneous noise level contributions, noted by the operator.
- **Audible** - the noise source and/or event may be easily defined by the operator. There may be a number of extraneous noise sources contributing to the measurement. The noise level will be quantified based on instantaneous noise level contributions, noted by the operator.
- **Dominant** - the noise source and/or event are noted by the operator to be significantly 'louder' than all other noise sources. The noise level will be quantified based on instantaneous noise level contributions, noted by the operator.

The following terms offer qualitative guidance in respect of acoustic terms used to describe the frequency of occurrence of a noise source during an operator attended environmental noise measurements:

- **Constant** - this indicates that the operator has noted the noise source(s) and/or event to be constantly audible for the duration of the noise measurement e.g. an air-conditioner that runs constantly during the measurement.

- **Intermittent** – this indicates that the operator has noted the noise source(s) and/or event to be audible, stopping and starting intervals for the duration of the noise measurement e.g. car pass-by's.
- **Infrequent** – this indicates that the operator has noted the noise source(s) and/or event to be constantly audible, however; not occurring regularly or at intervals for the duration of the noise measurement e.g. a small number of aircraft are noted during the measurement.

A.1.6 *How to Calculate or Model Noise Levels?*

There are two recognised methods which are commonly adopted to determine the noise at particular location from a proposed activity. The first is to undertake noise measurements whilst the activity is in progress and measure the noise, the second is to calculate the noise based on known noise emission data for the activity in question.

The second option is preferred as the first option is largely impractical in terms of cost and time constraints, notwithstanding the meteorological factors that may also influence its quantification. Furthermore, it is also generally considered unacceptable to create an environmental impact simply to measure it. In addition, the most effective mitigation measures are determined and implemented during the design phase and often cannot be readily applied during or after the implementation phase of a project.

Because a number of factors can affect how 'loud' a noise is at a certain location, the calculations can be very complex. The influence of other ambient sources and the contribution from a particular source in question can be difficult to ascertain. To avoid these issues, and to quantify the direct noise contribution from a source/site in question, the noise level is often calculated using noise modelling software packages. The noise emission data used in may be obtained from the manufacturer or from ERM's database of measured noise emissions.

A.1.7 *Acoustic Terminology & Statistical Noise Descriptors*

Environmental noise levels such as noise generated by industry, construction and road traffic are commonly expressed in dBA. The A-weighting scale follows the average human hearing response and enables comparison of the intensity of noise with different frequency characteristics. Time varying noise sources are often described in terms of statistical noise descriptors. The following descriptors are commonly used when assessing noise and are referred to throughout this acoustic assessment:

- **Decibel (dB is the adopted abbreviation for the decibel)** – The unit used to describe sound levels and noise exposure. It is equivalent to 10 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure.

- **dBA** - unit used to measure 'A-weighted' sound pressure levels. A-weighting is an adjustment made to sound-level measurement to approximate the response of the human ear.
- **dBC** - unit used to measure 'C-weighted' sound pressure levels. C-weighting is an adjustment made to sound-level measurements which takes account of low-frequency components of noise within the audibility range of humans.
- **dBZ or dBL** - unit used to measure 'Z-weighted' sound pressure levels with no weighting applied, linear.
- **Hertz (Hz)** - the measure of frequency of sound wave oscillations per second. 1 oscillation per second equals 1 hertz.
- **Octave** - a division of the frequency range into bands, the upper frequency limit.
- **1/3 Octave** - single octave bands divided into three parts.
- **Leq** - this level represents the equivalent or average noise energy during a measurement period. The $Leq, 15min$ noise descriptor simply refers to the Leq noise level calculated over a 15 minute period. Indeed, any of the below noise descriptors may be defined in this way, with an accompanying time period (e.g. $L_{10, 15\text{ minute}}$) as required.
- **Lmax** - the absolute maximum noise level in a noise sample.
- **LN** - the percentile sound pressure level exceeded for N% of the measurement period calculated by statistical analysis.
- **L10** - the noise level exceeded for 10 per cent of the time and is approximately the average of the maximum noise levels.
- **L90** - the noise level exceeded for 90 per cent of the time and is approximately the average of the minimum noise levels. The L90 level is often referred to as the "background" noise level and is commonly used as a basis for determining noise criteria for assessment purposes.
- **Sound Power Level (Lw)** - this is a measure of the total power radiated by a source. The Sound Power of a source is a fundamental property of the source and is independent of the surrounding environment.
- **Sound Pressure Level (Lp)** - the level of sound pressure; as measured at a distance by a standard sound level meter with a microphone. This differs from Lw in that this is the received sound as opposed to the sound 'intensity' at the source.

- **Background noise** – the underlying level of noise present in the ambient noise, excluding the noise source under investigation, when extraneous noise is removed. This is described using the L_{A90} descriptor.
- **Ambient noise** – the all-encompassing noise associated within a given environment. It is the composite of sounds from many sources, both near and far. This is described using the L_{Aeq} descriptor.
- **Cognitive noise** – noise in which the source is recognised as being annoying.
- **Masking** – the phenomenon of one sound interfering with the perception of another sound. For example, the interference of traffic noise with use of a public telephone on a busy street.
- **Extraneous noise** – noise resulting from activities that are not typical of the area. Atypical activities may include traffic generated by holiday periods and by special events such as concerts or sporting events. Normal daily traffic is not considered to be extraneous.
- **Most affected location(s)** – locations that experience (or will experience) the greatest noise impact from the noise source under consideration. In determining these locations, one needs to consider existing background levels, exact noise source location(s), distance from source (or proposed source) to receiver, and any shielding between source and receiver.
- **Noise criteria** – the general set of non-mandatory noise level targets for protecting against intrusive noise (for example, background noise plus 5 dB) and loss of amenity (for example, noise levels for various land uses).
- **Noise limits** – enforceable noise levels that appear in conditions on consents and licences. The noise limits are based on achievable noise levels which the proponent has predicted can be met during the environmental assessment. Exceedance of the noise limits can result in the requirement for either the development of noise management plans or legal action.
- **Compliance** – the process of checking that source noise levels meet with the noise limits in a statutory context.
- **Feasible and Reasonable measures** – feasibility relates to engineering considerations and what is practical to build. reasonableness relates to the application of judgement in arriving at a decision, taking into account the following factors:
 - Noise mitigation benefits (amount of noise reduction provided, number of people protected);
 - Cost of mitigation (cost of mitigation versus benefit provided);
 - Community views (aesthetic impacts and community wishes); and

- Noise levels for affected land uses (existing and future levels, and changes in noise levels).
- **Meteorological Conditions** – wind and temperature inversion conditions.
- **Temperature Inversion** – an atmospheric condition in which temperature increases with height above the ground.
- **Adverse Weather** – weather effects that enhance (increase) noise (that is, wind and temperature inversions) that occur at a site for a significant period of time.

A.1.8 *Operator Attended Noise Measurements*

Table A.1 below presents typical abbreviations that are used to describe common noise sources that may be noted during environmental noise measurements.

Table A.1 *General Field Note Abbreviations*

Abbreviation	Noise Source
ANML (B-I-D-L)	Animals (birds – insects – domestic – livestock)
ACFT	Aircraft
CPBY	Car pass by
DLCN	Dialogue, conversations e.g. with passers-by
DTRF	Distant traffic
LTRF	Local traffic
OIND	Other industry/industrial sites
OPTR	Operator
RDOC	Residential/occupants
RHUM	Rural hum
SHUM	Suburban hum
UHUM	Urban hum
WBVG	Wind-blown vegetation

During operator attended noise measurements, the sound level meter will present the instantaneous noise level and record acoustical and statistical parameters. In certain acoustical environments, where a range of noise sources are audible and detectable, the sound level meter cannot measure a direct source noise level and it is often necessary to account for the contribution and duration of the sources.

Noted Percentile Contribution – Table A.2 presents noise level deductions that are typically applied based on the percentage contribution of a noise source(s). **Noted Time Contribution** – Table A.3 presents noise level deductions that may be applied based on the percentage of time that a noise source(s) is audible during a 15 minute measurement. Where the noise emission from a source is clearly detectable and the contribution can be measured, these deductions are not necessary.

Table A.2 *Noise Level Deductions – Noted Percentile Contribution*

Percentage Contribution	Noise Level Adjustment, dBA
5%	-13.0
10%	-10.0
15%	-8.2
20%	-7.0
25%	-6.0
30%	-5.2
35%	-4.6
40%	-4.0
45%	-3.5
50%	-3.0
55%	-2.6
60%	-2.2
65%	-1.9
70%	-1.5
75%	-1.2
80%	-1.0
85%	-0.7
90%	-0.5
95%	-0.2
100%	0.0

1. **EXAMPLE:** the measured Leq, 15 minute noise level is 49 dBA and the site contribution was observed to be 10% of this level (extraneous noise sources were noted to dominate the measurement), therefore the Leq, 15 minute noise level deduction is 10 dBA, with a resultant site noise level contribution of approximately 39 dBA.

Table A.3 *Noise Level Deductions – Noted Time Contribution*

Event Duration (minutes)	Noise Level Adjustment, dBA
1	-11.8
2	-8.8
3	-7.0
4	-5.7
5	-4.8
6	-4.0
7	-3.3
8	-2.7
9	-2.2
10	-1.8
11	-1.3
12	-1.0
13	-0.6
14	-0.3
15	0.0

1. **EXAMPLE:** the measured Leq, 15 minute site noise level contribution of an excavator was noted to be 56 dBA, however it was only audible for six minutes during the 15 minute measurement period, therefore the Leq, 15 minute noise level deduction is 4 dBA, with a resultant site noise level contribution of approximately 52 dBA.

Annex B

Operator Attended Noise Measurement Field Sheet

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ANML (B-I-D-L) = Animals (birds - insects - domestic - livestock), ACFT = Aircraft, CPBY = Car pass-by, DLCN = Dialogue, conversations e.g. with passers-by, DTRF = Distant traffic, LTRF = Local traffic, OIND = Other industry/industrial sites, OPTR = Operator, RDOC = Residential/occupants, RHUM = Rural hum, SHUM = Suburban hum, UHUM = Urban hum, WBVG = Wind-blown vegetation



Date:		
ERM Personnel:		
Job Number:		
Measurement Location:		
GPS (UTM):	Easting	Northing
Temperature:		° Celsius
Wind Speed (m/s):	Average	Maximum
Wind Direction:		
Cloud Cover:		Octas
SLM Type:		
SLM Serial Number:		
Calibration on set up:		dB
Measurement Location / Noise Source/s Diagram ↓		
<div style="border: 2px solid red; padding: 10px; width: fit-content; margin: 0 auto;"> <p>APPROVED FOR THE MINISTER FOR PLANNING</p> <p>SHEET 114 OF 301</p> </div>		

Measurement Details			Measured Noise Levels						Settings	
Start Time:	Duration:	File Name:	Lmax	Lmin	Leq	L1	L10	L90	A / C / Z	F / S / I
									A	F
Noise Source/Event Description ↓			Instantaneous Noise Levels ↓		Percentage Contribution ↓	Time of Day ↓		Event Duration ↓		
Estimated Site % - Total Measurement					% (noise level and duration adjusted)					
Offensive Noise Characteristic Penalty					dB					
Estimated Site Noise Level Contribution					dB					

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Appendix D – Sediment, Erosion and Water Quality Management Plan

**APPROVED FOR THE
MINISTER FOR PLANNING**

SHEET 116 OF 301



Dundonnell Wind Farm

Sediment, Erosion and Water Quality Management Plan

Revision G

27/11/2018

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Revision History

Revision	Changes	Date	Prepared By	Approved By
A	Document Developed	04/04/2018	JR	ED
B	Updated to address comments and EES requirements	07/05/2018	JR	ED
C	Updated to address comments from TILT	06/06/2018	ED	ED
D	Updated for Agency Review	20/06/2018	CL	MG
E	Updated in response to agency comments	19/09/2018	DH	ED
F	Updated in response to agency comments	11/10/2018	ED	MG
G	Updated in response to agency comments	27/11/2018	ED	CL

1 Introduction

This Sediment, Erosion and Water Quality Plan (SEWQMP) has been prepared by Zenviron Pty Ltd, on behalf of Dundonnell Wind Farm Pty Ltd, in relation to the Dundonnell Wind Farm.

The Dundonnell Wind Farm was approved by the Minister for Planning in July 2016 under Planning Permit 2015/23858 (the Planning Permit), issued 23 October 2016.

This SEWQMP has been prepared in accordance with of Condition 42 of the Planning Permit and is generally in accordance with Chapter 25 of the Dundonnell Wind Farm EES (June 2015). The purpose of this plan is to outline how water contamination, sediment and erosion will be managed throughout the construction and operation of the Dundonnell Wind Farm to minimise water pollution and other environmental impacts. The requirements for SEWQMP are set out in the planning permit conditions presented in Table 2.

2 Objectives, targets, key issues and statutory requirements

Table 1 - Objectives, key issues and statutory requirements of Sediment, Erosion and Water Quality Management Plan.

Objectives	This SWEQMP has been developed with the objective of providing a framework of requirements for sediment and control guidelines to be employed during and after construction.
Key Issues	<ul style="list-style-type: none"> • Uncontrolled development and operational activities that could lead to water or land contamination, erosion or sedimentation. • Soil loss during the construction of access tracks and stockpiling during a significant event can also increase the risk of erosion and sedimentation. • Temporary flooding and road wash out at waterways crossings during a storm event have a potential to cause erosion and sedimentation. • Unmanaged areas of high flooding susceptibility impacting on water quality and the ground surface.
Relevant legislation, standards and/or guidelines	Environmental Protection Act 1970 Water Act 1989 Planning and Environment Act 1987 Moyne Shire Council Planning Scheme SEPP (Waters of Victoria) 2003 SEPP (Ground Waters of Victoria) 1997 Glenelg Hopkins Catchment Management Strategy 2013-2019 SEPP (Prevention and Management of Contamination of Land) 2002 Environment Protection (Industrial Waste Resource) Regulations 2009 EPA Publication 878 Classification for Contaminated Soil (October 2002) EPA Publication "Classification of Wastes", Publication 448.3 May 2007 EPA Industrial Waste Resource Guidelines Soil Sampling 2009 EPA Publication 480 Environmental Guidelines for Major Construction Sites EPA Publication 275 Construction techniques for Sediment Pollution Control EPA Publication 347: Bunding Guidelines EPA Publication 891.1: Code of Practice, Onsite Wastewater Management

	<p>State Environment Protection Policy (Air Quality Management) No. S240, Gazette 21/12/2001</p> <p>EPA Victoria, 2009, A guide to the sampling and analysis of water, wastewaters, soils and wastes, Publication IWRG701</p> <p>EPA Victoria, 2003, Water Quality Objectives for Rivers and Streams – Ecosystem Protection</p>
License/permit requirements	<p>Permit to carry out works over a waterway – Glenelg Hopkins Catchment Management Authority.</p> <p>Works Approval from EPA is required if sewage (including sullage) effluent, treated, discharged or deposited on site exceeds a design or actual flow rate of 5,000 litres per day.</p>

3 Permit Condition Requirements

Table 2 - Relevant planning permit conditions from the Planning Permit (Moyne Shire Council).

Condition	Requirement	Relevant section
42	The environmental management plan must include a sediment, erosion and water quality management plan which must be prepared in consultation with the Glenelg Hopkins Catchment Authority prior to its submission to the responsible authority.	This document
42a)	Identification of all construction and operational processes that could potentially lead to water contamination;	Sections 6.1, 6.2
42 b)	<p>Procedures to ensure that silt from batters, cut off drains, table drains and road works is retained on the site during and after construction and replaced as soon as possible. To this end:</p> <ul style="list-style-type: none"> i) all land disturbances must be confined to a minimum practical working area; ii) soil to be removed must be stockpiled and separate soil horizons must be retained in separate stockpiles and not mixed, and soil must be replaced as soon as possible In sequence; and iii) stockpiles must be located away from drainage lines; 	<p>Sections 7.3, 7.4, 7.5</p> <p>Section 5.1.1</p> <p>Section 7.4.3</p> <p>Section 7.3</p>
42 c)	The installation of geo-textile silt fences (with sedimentation basins where appropriate) on all drainage lines from the site which are likely to receive run-off from disturbed areas;	Sections 7.3
42 d)	Procedures to ensure that steep batters are treated in accordance with EPA Publication 275 Construction Techniques for Sediment Pollution Control (May 1991);	Section 7.4.2
42 e)	Procedures for waste water discharge management;	Sections 9

Condition	Requirement	Relevant section
42 f)	A process for overland flow management to prevent the concentration and diversion of waters onto steep or erosion prone-slopes;	Sections 7.4, 7.4.12
42 g)	Pollution management measures for stored and stockpiled materials including waste materials, litter, contaminated run-off and any other potential source of pollution to ground or surface waters;	Sections 6.1.2, 8.1.2, 10
42 h)	Incorporation of appropriate pollution control measures outlined in EPA Publication 480 Environmental Guidelines for Major Construction Sites (May 1996);	
42 i)	A program and appropriate capacity for annual inspection and regular maintenance of any on-site wastewater management system;	Sections 11.2
42 j)	Procedures to manage dust from access tracks to prevent adverse impacts on the amenity of neighbouring residential properties;	Section 6.1.1, 8.2
42 k)	A program or inspection and remediation of localised erosion within a specified response time; and	Section 7.4.1
42 l)	Siting of all buildings, structures and access tracks to avoid location within 20 metres of designated waterways where possible and to take into consideration key stony rise areas as well as the springs and wetlands on the site.	Section 6.11, 6.12

4 Site Characteristics

The site is located within the Glenelg Hopkins CMA region and lies in-between a number of lakes with Lake Eyang 8km to the west and Salt Lake 3km to the east. There are a number of designated waterways/minor streams within the site.

4.1 Local hydrology

Regionally the topography of the site is relatively flat with localised highs formed as a result of stony rises, eruption centres, tectonic uplifting and faulting, this has led to a site that is undulating with differential weathering of the basalt, and erosion. The maximum elevation measured on site is 266mAHD, which is located at the centre of the proposed wind farm site close to Mt Fyans at the top of the stony rise.

The lowest elevation recorded onsite was on the southern boundary of the wind farm site at 185mAHD, as a result the regional water flow direction is considered to be from north to south and generally follows topography.

The site has been subject to significant lava flows in the past and these flows have blocked and diverted numerous streams which have formed a series of wetlands and ponds, including an active groundwater discharge zone in the south-west of the wind farm site. Whilst these landforms and ponds has resulted in a number of designated waterways within the wind farm site, the project has been designed to ensure that all associated infrastructure will not impact these waterways. A surface water assessment plan of the Dundonnell Wind Farm by Water Technology in 2014 concluded that the Wind Farm turbine location area was located in the high point of the catchment with no contributing catchment impact.

Designated waterways that are crossed or impacted by the project in any way will require a Works on Waterway licence from the Glenelg Hopkins CMA. Refer to EMP Appendix M Figure 2 for the location of designated waterways.

5 Design considerations

5.1 Construction

Given the relatively flat nature of the site it is not anticipated that construction works will cause scour or adverse sedimentation impacts, however design has considered potential impacts from:

- Access tracks and hard standings
- Turbine foundations
- Quarry works
- Substation and construction compounds hardstands.

Through the detailed design of all bulk earthworks, existing surface flow patterns will be maintained across the site. Works will be undertaken to ensure surface runoff is directed into the existing draining paths, through the use of table drains, crowning of track surfaces, culverts, and other drainage features to minimise scouring and erosion.

5.1.1 Access tracks and hard standings

Appropriate design, construction and maintenance of access tracks will ensure that any effects on water flows can be minimised. Design has been undertaken with consideration of the following:

- Minimise length of on-site tracks
- Utilise the existing road network where possible
- Avoid locating infrastructure within floodplain areas or along major drainage lines and riparian zones in order to avoid increasing flood levels or diverting flood flows.
- Avoid any instream or riparian works that could cause direct damage to waterways, including loss of riparian or instream vegetation, or construction or installation of instream barriers.
- Avoidance of ecologically sensitive areas.

5.1.2 Turbine foundations

Micro-siting of the turbines will take into account the following considerations:

- Avoid existing trees and vegetation,
- Consider geological conditions to avoid areas with large depths of overburden and minimise the volume of excavation required,
- Avoid natural low points which could disrupt natural water flow and/or drainage during wet periods.

5.1.3 Substation compounds and hardstands

Hardstands and compounds will be designed with permanent water flow paths and other items given consideration:

- Minimise increases in water concentration associated with construction of hardstands through collection of runoff from buildings in tanks for reuse,
- Decrease the downstream flow impacts from concentrated storm water flow through the installation of sediment ponds/basins as necessary,
- Decrease the velocity of stormwater flow through installation of water dispersal and flow dispersion devices.

5.1.4 Water storage dams/facilities

Given the sensitivity within the surrounding environment in regard to aquatic fauna, and in particular waterbirds, no water storage dams or exposed water storage facilities will be established within the project site without approval from the site environmental representative. Prior to approval the site environmental representative will consult with an ecologist to ensure that the water storage facility does not in any way increase the sites appeal to waterbirds.

5.2 Operation

Permanent erosion control features (where required) should be monitored by the Site Manager during operation and maintained/rehabilitated as necessary. Rehabilitated areas will be monitored during wind farm operation for any evidence of compromise or failure or rehabilitation measures.

6 Onsite management and mitigation

The following procedures have been developed for deployment during construction and operation to prevent environmental damage to surface waters through the management of erosion and sedimentation.

6.1 Construction

The following sections outline the major construction processes that could potentially lead to water contamination and outlines the mitigation strategies that will be employed to manage and reduce the impact.

6.1.1 Access tracks and hard standings

- Maintenance of drainage system and track and hard standing surfaces.
- Minimise increase in flood levels associated with construction of culverts and/or bridges in access roads across creeks and major drainage lines through appropriate consideration in the design of these structures. If creek crossings cannot be avoided the use of ford crossings is recommended where feasible (i.e. cable crossings).
- Site preparation works and major earthwork activities will be planned to occur during summer months. Where this is not possible, earthwork activity will be avoided during heavy rain events.
- Dust suppression procedures for all roads/access tracks and hard standings to be in place for the entire construction period to prevent adverse impacts on the amenity of neighbouring properties, including:
 - Limiting the amount of exposed earth left as a result of clearing (for site preparation) at any one time to the minimum practical.
 - Structuring all stockpiles to avoid loss of material during high wind events, and where practicable placing them in areas sheltered from the wind. Where significant amounts of materials are lost, a review of storage procedures should be undertaken to avoid recurrence of the event.
- Stabilisation and rehabilitation of disturbed surfaces as soon as practicable after works.
- Installation of erosion and sediment controls prior to construction commencing in specific areas of the site, to minimise the amount of silt erosion and to prevent the export of sediments from the site. Measures are discussed further in section 7.0 below.
- All buildings, structures, and access tracks will be located at least 20 metres away from designated waterways, key stony rise areas, and any springs and wetlands areas located on the site and where practicable. Refer to EMP Appendix M Figure 2.

6.1.2 Turbine foundations

- During excavation for foundations, subsoil will be separated from topsoil for rehabilitation purposes. Topsoil from the excavation sites will be stockpiled and replaced to its original depth for seeding and fertilising.
- Landforms will be stabilised and rehabilitated as soon as practicable after works.
- Stockpiling of material excavated from turbine bases will be placed outside drainage paths, protected with silt fences if required and covered at the end of the day.
- Areas disturbed during turbine installation, and not required to remain cleared, are to be reinstated to their previous condition (as far as practicable) or as agreed by landowners/Council.

- All foundations will be located at least 20 metres away from designated waterways, key stony rise areas as well as spring and wetlands areas on the site.
- Careful consideration of the placement and management practices for the concrete batching plant will occur; and suitable bunding arrangements adopted to prevent contamination of the surrounding soils.

There is a risk of contamination to soils as a result of hydrocarbon infiltration and on-site sewage facilities. To address these risks, the following mitigation measures will be implemented during construction:

- Space allocated for bunded site storage areas for hydrocarbons and hazardous substances (HHS) and any potential contaminants,
- Storage of hydrocarbon/appropriate chemical spill kits on-site,
- Operation and maintenance of machinery in a manner that minimises risk of hydrocarbon spill,
- Concrete wash outs will be constructed in an excavated area, below the level of the topsoil wherever practicable. Where not practicable they shall be constructed of sub surface material and situated within the hardstand footprint,
- Minimise risk of chemical spills through implementation of the HHSMP management procedures and ensure prompt and effective clean-up of any accidental spills,
- Ensure appropriate disposal of effluent from onsite staff facilities utilising licenced contractor/s.

6.2 Operations

The operational phase of the wind farm will require minimal use of on-site access tracks by maintenance personnel. No soil or landform impacts are anticipated to be generated during operational phase provided the following measures to restrict runoff and thus limit off-site impacts are implemented:

- Monitoring and/or regular maintenance of drainage systems and sediment control devices and upgrade/reinstatement as required.
- Construction mitigation measures listed above are instigated if sizable maintenance works are required.
- All vehicles on-site follow established tracks and park only on hardstand areas.

7 Erosion and Sediment Controls

7.1 Definitions

There are four primary erosion types as defined below:

Splash erosion: is caused by the direct impact of falling rain drops on the soil particles. This impact dislodges soil particles and splashes them into the air. The dislodged soil particles can then be easily transported by the flow of surface runoff.

Sheet erosion: refers to the removal of a layer of exposed surface soil by the action of raindrop splash and runoff. The water moves in broad sheets over the land and is not confined in small depressions.

Rill and gully erosion: is caused by concentrated runoff in waterways, cutting several inches deep into the soil surface. These groves are called rills. Gullies may develop in unrepaired rills or in other areas where a concentrated flow of water moves over the soil.

Stream and channel erosion: is caused by increase in the volume and velocity of runoff.

7.2 Guiding management principles

The following guiding principles will be followed in order to prevent impacts on surface waters and ensure effective sediment and erosion control:

A series of location specific site environmental work plans and ground disturbance permits will be prepared by the construction Contractor prior to construction commencing in specific areas of the site. These plans and permits will clearly identify the following:

- Any areas prone to erosion that must be avoided;
- The location of all drainage lines including buffer zones;
- Site establishment requirements including:
 - Procedures for site establishment
 - Stockpile locations
 - Equipment lay down locations
 - Locations of sediment fencing, diversion drains and other devices to capture or redirect runoff
 - Location of equipment entry and exit points and the location of on-site access tracks
 - Waste stockpile areas
 - Fencing area for vegetation, buffer zones and erosion control areas
 - Equipment lay down locations
 - Equipment wash down locations
- Up-slope water diversions around the worksite to prevent contamination where applicable. This can be done with bunding or spoon drains;
- Site entry/exit points stabilisation to avoid erosion or water logging. This can be done with gravel or more permanent measures if entry and exit points are to be in place for extended periods;

Other principles that will guide effective erosion and sediment control include:

- Site disturbance areas and the duration of disturbance should be minimised;
- Areas should be immediately and progressively rehabilitated as this becomes possible.
- Sediment controls must be installed along the lower edge of construction sites where applicable;
- Stockpiles should be established in the mapped locations and graded appropriately. Stockpiles will not mix soil types and must be regularly monitored to ensure their integrity;
- Stockpiles for differing classes of soils (topsoil, subsoil etc) will be stockpiled separately and will not be mixed;
- On-site run-off from any equipment, concrete batching, washing and/or cutting should be contained on-site for disposal to a treatment facility;
- Continual monitoring and maintenance of all control measures must be undertaken;
- Compaction of backfilling of trenches must be undertaken as soon as possible restoring soil profiles to their original condition.

7.3 Preconstruction

The following procedures should be noted during the preconstruction and design phase:

- Prior to commencement, all site personnel must be made aware of their responsibilities under the environmental management plan and this sub-plan.
- Designers shall, as far as reasonably practicable, balance the cut and fill ratio of the earthworks at the site to minimise earth moving and associated construction activity.
- Designers shall design all associated infrastructure at the site to possess the minimum footprint and volume of earthworks practicable.

- Sediment control measures will be installed downstream of access tracks as required, as well as around sensitive areas and downstream of construction sites to minimise soil mobilisation, sediment runoff and prevent any turbid plumes from entering the waterways.
- Soil stockpiles will be located away from drainage lines and native vegetation.

The following procedures will be observed during site establishment:

- The site should be prepared in direct accordance with the Construction and Work Site Management Plan.
- Distinct works sites such as transmission pole foundations and concrete batching plant areas will be prepared in accordance with EPA Victoria (1991) 'Construction Techniques for Sediment Pollution Control Measures'.
- Diversion banks or spoon drains will be installed up gradient of the worksite to divert clean runoff around the construction site where applicable.
- All sediment controls will be installed as per the instructions in this document and established prior to construction or relevant work areas.
- Silt traps/sedimentation basins will be installed where necessary to capture and detain construction site runoff. These should be sized as per the guidelines in section 7.4.9 below.
- Sediment fences, spoon drains or equivalent sediment controls will be installed downslope of stockpiles, along access tracks and access track construction sites as required. The devices will be installed at low points where surface water flows are directed.
- Where applicable, sediment fences will be installed along major drainage lines where construction activity is taking place within 100m of these lines. If there is a lack of vegetation and grassed (i.e bare soil) areas between construction areas and water bodies the installation of sediment fencing will be considered even if the water body is further than 100m away.
- As a precautionary mitigation measure a 55m buffer has been applied to all dams, waterways and tributaries that could provide potential habitat for the Corangamite Water Skink and Growling Grass Frog. No turbines or related infrastructure will be placed within these 55m buffer zones for the above species. Refer to Figure 2 in Appendix M of the Environmental Management Plan.

7.4 Construction

Construction activities will be aimed to:

- Avoid wherever practicable impacting any highly erodible soils or steep slopes.
- Reduce the time exposed surfaces remain un-stabilised by instituting re-seeding program or installing temporary cover where required.
- Rehabilitate cleared areas promptly and with the most appropriate seeding program or methodology.
- Limit (or stop) ground disturbance works in wet weather conditions where it is noted that sediment laden water is pooling, or where sediment controls appear to have the potential to be overwhelmed or breached.

7.4.1 Identify and manage areas prone to erosion

Areas prone to existing erosion will be avoided during the construction phase. These areas will be deemed as off-limits unless an appropriate engineering solution has been provided or where it is deemed as absolutely necessary to construct project access, if works are deemed as necessary protective fencing should be established prior to activities commencing in these areas to denote "No-Go" zones outside of the proposed impact.

The site environmental representative will implement a preventative maintenance program for pollution-control installations as per the guidance within EPA Victoria Publication 480 to limit downstream impacts.

7.4.2 Steep batters/slopes

The site environmental representative will ensure that the Project follows the procedures outlined in the EPA Victoria Publication 275 'Construction Techniques for Sediment Pollution Control' to ensure that steep erodible batters are treated appropriately for sediment erosion control.

The project team will ensure that restoration works for borrow areas include the requirement for permanent batters to be at a slope no steeper than 2H:1V (preferably flatter) to permit soil placement for re-vegetation.

When installing topsoil on steep batter's consideration will be given to retaining it by installing horizontal boards, mesh, branches, logs, or other suitable material held and secured by vertical stakes, rods or other methods. Fibre mesh or mulch pinned firmly onto batters can also help to trap topsoil.

If imported rock is required to be installed for access track stabilisation, then the sealing of these tracks will be considered, noting that a combination of trafficking and rain would lead to a loss of imported rock over time if the road is left unsealed. This is especially important if grades of up to 18% are to be adopted and heavy loads will be accessing the site.

7.4.3 Soil excavation

All areas of disturbance will be cleared and excavated with reference to the guidance below:

- Install geotextile silt fences on the exit points of all drainage lines from the site which are likely to receive run-off from disturbed areas.
- Install flow control devices within the drainage channels where they are deemed as required, where necessary consult with the site environmental representative.
- Covering vegetation will be removed along with the underlying topsoil layer and stockpiled together.
- Underlying subsoil will be excavated to the required depth and stockpiled separately to the vegetation/topsoil stockpile. The operator must take care to minimise mixing of soil horizons.
- Relocated excess excavated material should not impinge on the likely floodplain and not alter or adversely impact surface water flow patterns.

7.4.4 Trench backfilling

To avoid any unnecessary soil erosion, cable and other services trenches will be backfilled with the same subsoil material extracted wherever practicable, where this is not possible advice should be sought from the site environmental representative who will provide further guidance. Following the return of the subsoil the material should be capped with topsoil and compacted to a level at least 75-100mm above the adjoining ground level as soon as possible.

7.4.5 Erosion and Sediment control measures

All sediment control measures must remain in place and be fully operational during any stage or pause in construction. All Erosion and Sediment control measures will be subject to a program of inspection and maintenance that will be generally in accordance with the monitoring requirements in Section 11.2 of this document.

The installation of sediment and erosion controls during the construction phase of the Dundonnell Wind Farm will be the responsibility of the construction Contractor's Site Supervisors and Foremen. Specific sediment and erosion controls are temporary controls used during the construction phase. These controls are designed, selected and implemented as the project is being constructed in specific areas. The site Environmental Representative would provide advice to the Site Supervisors and Foremen on the selection and use of the various erosion, sediment and drainage controls listed below.

All sediment retention structure will be designed and installed to cater for flows from a one in two year storm event (two year ARI with intensity of six hours) (EPA Victoria Publication 480).

7.4.6 Diversion (spoon) drains

Where necessary, surface drainage controls will be installed upstream of worksite to redirect excess water around work sites. Subsurface drainage systems can include gravel or oversized rock filled (dutch) drains, slotted or perforated pipes along gravel filled trenches and thick filter membrane materials.

Drains must be appropriately sized and constructed of material with sufficient strength to slow and divert expected flow intensity/levels. Drains must discharge to a controlled surface preferably vegetated areas of at least 10m in width to allow water to spread without causing erosion.

7.4.7 Silt fences

Silt fences will be installed in accordance with EPA Victorian Publications 275 and 480 to stop entrapment and transport of sizable quantities of sediment by runoff.

Silt fences will be installed at the following locations before construction commences:

- At the downstream boundary of overland flow paths from disturbed areas within the construction site.
- Immediately downstream of stockpiles, however circling of all un-stabilised stock piles and batters with silt fences should be considered.
- On contours for progressive filtering; and
- At toe of the slopes of erosion prone areas.
- Sediment fences must be installed along a line of constant ground elevation wherever practicable to ensure their effectiveness.
- Support posts should be no more than 1.5-2 metres apart unless the fence is supported by top wire or a wire mesh backing in which case 3m spacings are acceptable.
- Four staples or sections of tie-wire should be installed per stake.

7.4.8 Straw bale fence

Straw bale fences can be an effective way of reducing flow rates (and thereby allowing sediments to fall out of suspension) and not to filter runoff. Where installed a straw bale fence must be:

- Used to service catchments of areas less than 0.5ha only,
- Installed in a manner which ensures no gaps are present that would allow runoff to pass under or around the bales,
- Be constructed only from straw bales – i.e. hay bales must NOT be used.

7.4.9 Vegetation strips

Vegetation strips are bands of permanent, dense, low vegetation, usually grasses, planted across slopes to intercept runoff before it develops into a concentrated flow and trap sediment runoff before it has a chance to move into watercourses.

Vegetation strips may be installed along steep banks or in areas where surface water is directed or dewatering is taking place to break the flow of water and disperse it over a larger area. These strips are most useful where the land use precludes permanent groundcover or as a supplementary measure to other temporary sediment and erosion control measures.

7.4.10 Constructed banks

Earthen banks (or Berms) can be used to divert clean water around disturbed soil to avoid the soil becoming contaminated with sediments or be used to break up slopes into shorter lengths to reduce depth and speed of runoff flow, and convey water to a stable watercourse, water storage or water absorption area. They are useful in reducing peak runoff flows from catchments by slowing the speed of the water and forcing it to travel longer distances to move through the property.

The shape and type of the bank depend on the situation and land use and/or the need for trafficability by different types of machinery, but there are some basic guidance principles:

- Make the channel created by the bank large enough to carry runoff from heavy rain without concentrating the flow.
- Design the bank outlet such that it discharges water without causing more erosion i.e. to a well vegetation and lightly sloping area wherever possible.
- Depending on the slope/grade, different bank slopes should be considered. (See Table 3).

Table 3 - Bank Shape recommendation for different slopes (Source: IECA 2009)

Bank Shape	Land Slope	Slope of bank batter to channel	Example
Broad	0-3%	1:6 or flatter	
Semi-broad	3-8%	1:4	
Peaked	8-20%	1:1.5	

7.4.11 Sediment basins

Sediment basins will be installed downslope of drainage flows at the site compound, concrete batch plant, and substation site to capture sediment laden water during the construction phase.

Sediment traps/basins prevent eroded soil and suspended particles from leaving the property and/or entering a permanent watercourse. They are also useful in capturing potential contamination when installed as part of the downstream controls of a substation or compound bench, however in order to ensure the effectiveness of such a control consideration should be given to the following;

- The location, and footprint of appropriately sized sediment traps/basins will be included on site plans where they are intended to be installed.
- Appropriately sized means the ability to handle a one-in-two-year storm event with an intensity of six hours in correlation to the catchment size.
- They should always be located with consideration to existing drainage paths, waterways and landholder dams to ensure that accidental release will not result in contamination/pollution events.
- Depth markers should be installed to ensure that site personnel are cognisant of the remaining capacity within the basin/trap,
- Basins/traps should be part of an ongoing monitoring process to ensure they remain effective, consideration should be given to treating and de-watering a trap prior to a heavy rainfall event (>20mm in 24 hours) when they are at >50% capacity.
- Once a trap/basin reaches 60-70% capacity, the sediment has to be removed and stabilised at an appropriate site.
- Sedimentation basins should be designed to be specific to the predominant site soil type and preferred treatment methodology, however in general they should be constructed as per the layout in Figure 1.

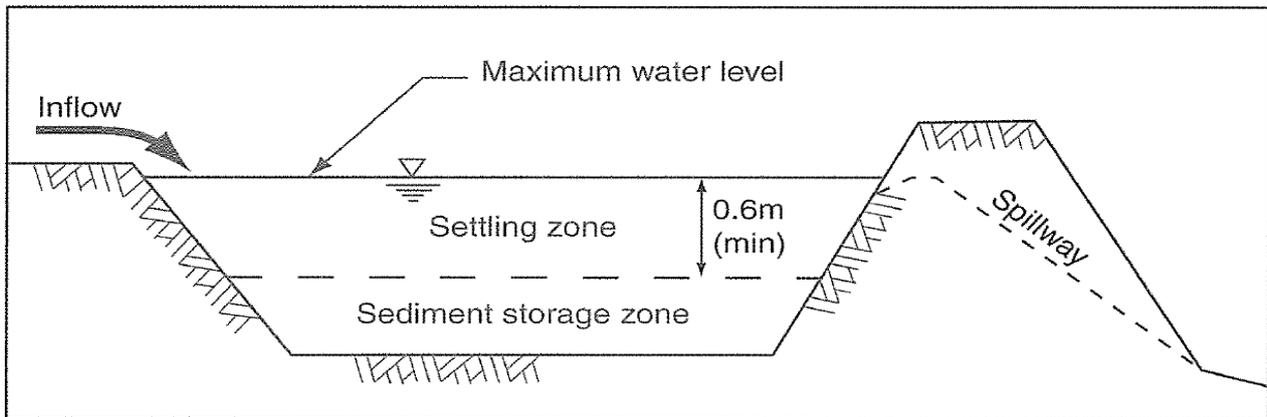


Figure 1 - Type C sediment basin layout (Source: International Erosion Control Association 2009)

7.4.12 Stockpile – establishment and management

Stockpiles should be installed as per the steps below:

- All stockpiles must be located within the approved project boundary or activity area.
- The size and number of stockpiles should be limited to the minimal practicable at all times.
- Stockpiles must be located away from areas subjected to concentrated overland flow or with the potential to be subjected to flooding. Wherever practical, sand and soil stockpiles should be located within the general sediment control envelope of the work site of once one has been established.
- Where required a flow diversion bank or spoon drain shall be placed up-slope of a stockpile to direct overland flow around the stockpile (see figure 2 below for general guidance). All soil stockpiles should remain in a free-draining condition to avoid long-term soil saturation. Silt fencing/spoon drains or equivalent sediment controls are to be installed around all stockpiles on site.

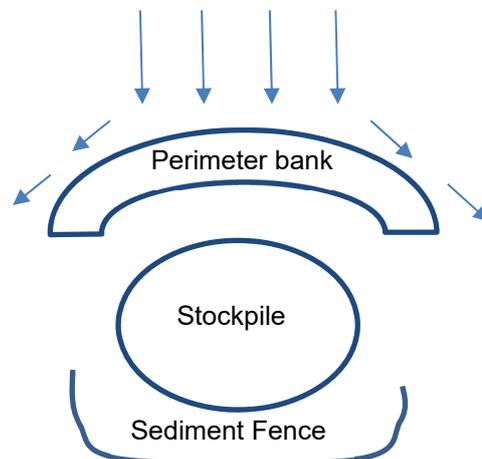


Figure 2 - Installation of perimeter bank (general guidance only)

- Stockpiles are to be located away from all roads, residential properties, drainage lines and stormwater drains.
- Stockpiles are not to be located with a Tree Protection Zone, where the radius of the Tree Protection Zone (TPZ) = 12xDBH (DBH= Diameter at Breast Height= trunk diameter measured 1.4m above ground level).
- Stockpiles shall be low in height, have a flat-top, be graded and compressed to achieve a smooth and compact surface, and be in the shape of an elongated mound. Construct the stockpiles with flat

slopes with no slope greater than 2:1 (horizontal to vertical). A lesser slope may be required where the erosion risk of the stockpiled material is high.

- Stockpiles that will remain bare for more than 28 days are to be stabilised using approved soil binders, by covering with mulch, anchored geotextile fabrics, or seeding with sterile grass/hydro seed.
- Stockpiles should be visually monitored during dry or windy periods and adequate protective measures installed where appropriate including; mulch, anchored fabrics or watering down with an approved water supply to prevent excessive dust generation from stockpiles.

7.5 Post Construction

On completion of construction activities disturbed sites should be rehabilitated to their original condition as soon as possible/practical:

- The original surface contours should be restored as far as possible provided they have been considered in the overall drainage design of the site,
- Soil should be placed back in its original profiles with all due care taken to prevent mixing,
- Vegetation should be re-established using project approved seed mixes, where seasonal variation prevents seedling establishment a cover crop or alternate control may be considered (i.e. hydro mulch).
- Sediment controls should be removed when it is assessed that they are no longer required by the site environmental representative or site manager.
- Permanent erosion control features should be inspected and effectiveness verified, these controls must be monitored throughout the operations phase and maintained/rehabilitated as necessary.

8 Concrete Batching plant

The following criteria and management practices have been developed in accordance with the EPA document 'Environmental Guidelines for The Concrete Batching Industry' (EPA Victoria (1998) Publication 628). Construction of the single concrete batching plant at the Dundonnell Wind Farm will comply with the management requirements in this EPA Publication. The following practices below will be undertaken during the construction, operation and eventual decommissioning of the concrete batching plant. The location of the concrete batch plant can be found in Figure 2 of the EMP.

8.1 Preconstruction

8.1.1 Location considerations

Concrete batching plants will be located at least 100 metres from any watercourse.

Batching plants will be sited on land that is not flood prone.

Vehicle access routes to the plant location will only utilise established tracks and hardstand areas, never traversing on unstable or unprepared ground.

The batching plant will be located at least 100m from any sensitive receptors such as domestic houses, sensitive flora and fauna or other noise, dust or emission sensitive areas.

The requirements for plant siting and the associated mitigation of water quality impacts are summarised in the tables below.

Table 4 - Requirements for plant siting (Source: EPA Victoria, 1998)

Issue	Requirement
Buffer zone	At least a 100-metre buffer between plant and residential zones
Groundwater	No shallow groundwater in the plant's vicinity

Issue	Requirement
Winds	Bunkers located out of prevailing winds
Access	Plant access to minimise potential impacts on amenity
Amenity	Batching plant does not detract from local amenity

Table 5 - Water quality requirements (Source: EPA Victoria 1998)

Issue	Requirement
Paving	All working areas are paved in hard non-porous surface
Bunding	Bunding is able to contain runoff
Collection pit and recycle tank	Primary and secondary pumps fitted to collection pit Collection pit empty of water, sand and gravel Level controls working properly Recycle tank large enough to store runoff from 20mm rainfall event
Monitoring offsite discharges	Visual alarms on console – to indicate when water is discharged from site – are installed and operable Suspended solids levels of wastewater discharges less than 80mg/L
Fuel and chemical storage	Chemicals and fuels are stored in a dedicated and adequately protected store Bund around the storage facility is adequate Materials Safety Data Sheet available for all chemicals Underground storage tanks tested in accordance with applicable regulations

8.1.2 Site setup

A site plan will be developed for each distinct batching plant location prior to the installation works commencing, these plans shall cover key issues such as;

- the placement of infrastructure (electrical cabling included),
- stockpile locations, height and protection,
- waste collection and storage,
- Bunding locations and planned volumes of hazardous materials storage,
- entry and exit points plus planned traffic flow directions,
- sedimentation controls including washout areas,
- waste water management and any planned discharge locations,
- identification and fencing of vegetated areas and areas prone to erosion.

The construction site should be setup prior to delivery of any plant and/or other material. This includes:

- surface water diversion around the site,
- sediment traps/fences downstream of the site,
- stockpile areas established,
- spill kits put in place,

- waste collection areas established,
- fencing of sensitive areas.

Due to the nature of the potential contamination associated activity further site establishment protection mechanisms are required:

- All contaminated stormwater and process wastewater must be directed to a collection pit for recycling and the area of the site which generates contaminated stormwater runoff should have a separate dedicated drainage and treatment system to discharge clean stormwater from the site.
- The wastewater capture system must be able to store the contaminated runoff generated by 20mm of rain in 24hours.
- Wastewater stored in the recycling system should be reused (or disposed of offsite) at the earliest possible opportunity.
- There must be no dry weather wastewater discharges from the site.
- Any unavoidable wet weather discharges should be monitored for pH and suspended solids and the records retained.

Washout areas:

- Any washout area established at the batch plant will be located at least 100 metres from waterways or stormwater drains and entirely within the batching plant site.
- The washout area will consist of a washout tray/bucket or a geotextile lined ditch, with silt fence or coir logs at the downstream end, that is appropriately sized for the volume of concrete washout that is expected to take place during this project.
- The washout area will be used for washout of the concrete agitator and chute (at the conclusion of a concrete pour), or for wash out of onsite equipment.
- Washout water containing concrete residue (that has collected in the washout tray) will be managed in the following preferential order:
 - Direct washout water back into the concrete agitator,
 - Allow the washout water to remain in the washout tray and evaporate,
 - Once the concrete slurry has dried, it must be sent for recycling or stored until recycling can take place,
 - Shovel/sweep up any spillage and excess concrete slurry or residue immediately after completing the job,
- Contaminated runoff or washout water must not be disposed of directly to waterways or stormwater drains.
- To minimise the amount of washout water generated, scrape excess concrete off the equipment before it is washed.
- A high pressure, low volume water spray nozzle is preferred for cleaning down as it conserves water and reduces maintenance of sediment controls.

8.2 Construction

8.2.1 Dust suppression

- During the construction phase, it is probable that a large amount of materials will need to be stockpiled within the batch plant area and these may generate dust as part of the works, during dry or windy conditions dust generation may become significant. The following dust suppression procedures will be mandatory for any stockpiles and access roads onsite to prevent adverse impacts to neighbouring properties: Sand and aggregates must be kept damp;
- Belts and hoppers must be covered or enclosed;

- Keep pavements and surfaces clean;
- Fit cement silos with high level alarms, multi-bag pulse jet filters, airtight inspection hatches and automatic cut-off switches on the filler lines;
- Keep duct work airtight;
- Enclose the loading bay; and
- Develop and implement an inspection regime for all dust control components.

8.2.2 Waste

Waste generation during concrete batching should be minimised wherever practicable, where waste concrete is generated it must be taken to appropriate off-site disposal or where practical recycled on site, it must not be disposed of on-site.

Throughout the construction process batch plant operators should investigate ways to recycle excess material from agitators and ensure other wastes are stored in designated areas and disposed of off-site by accredited waste contractors.

8.2.3 Post Construction

Immediately following construction temporary batching plants should be removed and the area fully rehabilitated. Site soil profiles and contours should be re-established along with vegetation, any and all sedimentation prevention controls should remain in place until the site is deemed sufficiently rehabilitated by the Site Environmental Representative.

9 Waste Water Management (including dewatering)

9.1 Guiding principles

Wastewater generated on site shall be treated on site wherever possible by treatment systems sized to serve the peak design flows from the Project and to meet water quality requirements as dictated by the SEPP Waters of Victoria, 2003.

Treatment systems installed will include sedimentation ponds, sediment fences and controlled discharge through or to vegetated areas. Where onsite treatment is impractical due to site conditions, contaminated wastewater shall be transported away from the site and disposed at a licensed disposal facility.

Any domestic wastewater generated on site from portable toilets and other domestic uses will only be disposed of off-site by a licensed contractor or through an EPA approved wastewater treatment system on site.

9.2 Preconstruction

Suitably sized and typed wastewater management measures will be provided to ensure contaminated wastewater is not discharged to the environment, these will be installed as soon as practicable following commencement of site works. Sufficient domestic waste systems such as portable toilets will be placed at each worksite in numbers sufficient to service the anticipated workforce.

9.3 Construction

9.3.1 Dewatering of sediment control basins and trenches

Dewatering of sediment basins, traps and or trenches onsite is likely to be required during some stage in the construction process, in order to ensure that this process is undertaken with all due care and consideration, the following guidance must be observed;

- The quality of the water to be discharged must be determined prior to any dewatering activities commencing particularly turbidity and pH which must meet SEPP requirements. Visual inspections for oil and grease must also take place.
- Pumping must only occur at a rate the receiving environment will accept without erosion or spillage.

- If there is evidence of overflow, spillage or scouring all pumping must cease until the level in the receiving environment is safe to resume pumping or alternate measures are implemented.
- Where dewatering is to be transferred to natural waterways, water quality monitoring must be performed before, during and after to ensure the water does not exceed water quality standards identified in the SEPP. Water quality monitoring must be undertaken in accordance with EPA Victoria (2009) 'A Guide to the sampling and analysis of water, wastewaters, soils and wastes'.
- Where there is the possibility that water to be dewatered has come into contact with a non-sewage contaminant source (including sediment); the options are as follows:
 - Collect the water and dispose of it offsite, in accordance with appropriate procedures,
 - Disposal to stormwater or surface water is only permitted when the water has undergone onsite treatment to bring it to a quality that meets the requirements of the relevant SEPP guidelines (as determined by appropriate water quality monitoring depending on the contaminant type). Any discharges to surface waters must first be approved by the Site Environmental Manager and the GHCMA.
- Where it can be shown that there is no possibility that the water to be dewatered has come into contact with sewage, biosolids, sewage infrastructure or any other (non-sewage) contaminant source, the water can be:
 - Released onto a vegetated area of sufficient width (>10m) to remove any suspended solids, with written approval of the Site Environmental Representative.
 - Discharged using a filter sock or other sediment control devices as approved by the Site Environmental Representative.
 - Discharged into the stormwater system or a natural waterway (providing turbidity does not exceed 30NTU and water quality is within the guideline values outlined in the SEPP).
- Release to a stormwater system or natural waterway can only be undertaken with the approval of the Project Manager or the Site Environmental Representative.

9.3.2 On-site domestic wastewater systems

It is preferable that all waste-water generated on the Project from domestic uses such as toilets flushing, showers and kitchen facilities is transferred off-site for disposal at an approved location, however if on-site wastewater systems with on-site disposal (such as via irrigation and trenches) are proposed the following points should be taken into consideration:

- A works approval will be required by the Moynes Shire Council to conduct these activities, this works approval will generally assess based on whether:
 - Any on-site treatment system has been sized to typical industry standards and will be installed and maintained by an accredited organisation with experience in managing this type of infrastructure,
 - Any treatment system installed is located at least 100m from drainage lines and water bodies,
 - Consideration has been given to directing treated water onto areas which have been prepared appropriately as part of the planning program to ensure vegetation planted will not reduce the systems effectiveness over time.
- Where possible and with an aim towards reducing potable water usage, treated water should be utilised to help plants established themselves in the surrounding areas.
- Any on-site treatment facility that generates sewage (including sullage) effluent, exceeding a design or actual flow rate of 5,000 litres per day will require a Works Approval from EPA Victoria.

9.4 Post construction

Following the completion of construction works any wastewater management systems and devices should be removed and the impacted area rehabilitated, portable toilets should also be removed as soon as they

are no longer required. Removal of any associated sediment controls should only take place when there is no evidence of sediment release and in consultation with the Site Environmental Representative.

10 Waste reuse, recycling and disposal

10.1 Preconstruction

Areas for the storage and or temporary holding of waste, prior to removal off-site, will be identified on-site plans prior to construction commencing. All waste storage areas will be located within the existing site erosion and sediment management controls and any hazardous wastes will be appropriately stored, segregated and banded in designated areas as per the Hydrocarbon and Hazardous Substances Sub Plan.

10.2 Construction

Any waste generated on-site will be managed in such a way as to ensure that litter and debris do not find their way into the surrounding natural environment including local watercourses. Where it is deemed necessary (i.e. in elevated locations or areas of high wind) waste management areas will be fenced to ensure waste is not blown or washed into local waterways.

The sites specific waste segregation policies will be introduced to all personnel via the site induction process to ensure that:

- Materials for recycling and for landfill will be stored separately;
- Contaminated materials are kept separate and only handled by appropriate personnel/contractors; and
- Waste management areas are clearly signed and signposted.

Waste is be removed from site at regular intervals only by a registered waste management contractor to nearby approved recycling and landfill facilities.

10.3 Post construction

Waste management areas will be rehabilitated post construction as soon as practicable, where there is the potential for an area to have been contaminated by waste stored there previously a program of testing will be initiated in consultation with the Site Environmental Representative. No waste will be disposed of on-site or will remain on-site post construction unless otherwise agreed by landholders.

11 Inspection, monitoring and auditing

11.1 Inspection

The overarching internal inspection and monitoring program is outlined in the EMP. Additional monitoring requirements relevant to the management of sediment, erosion, and water quality are provided in this Section.

Baseline data collection will occur prior to the project commencing in order to establish the pre-existing surface water conditions of the various downstream receiving environments, this will allow for accurate comparisons of water quality to be made.

On-going monitoring of environmental performance will be undertaken throughout the construction phase to ensure the standards set by this plan are being complied with.

In addition to the regular monitoring scheduled to take place, an inspection of all sediment and erosion control structures will be undertaken under the following conditions;

- Prior to storms or heavy rain events;
- As soon as practicable following storm events;

- During rain events to determine the effectiveness of control measures; and
- As soon as practicable following any major accident or incident.

11.2 Monitoring

The following monitoring activities have been derived from EPA Publication 480 and outline how environmental impacts relating to water quality and sedimentation/erosion will be monitored on site. Water quality monitoring sites will be established when the construction contractor commences site establishment and suitable locations are chosen when personnel are on site prior to construction commencing.

Table 6 - Project Monitoring Requirements (Source: EPA Publication 480 Section 9.1 and 9.2)

Area of risk	Purpose	Monitoring activity	Frequency or Action	Personnel Responsible
Water quality	Prevent adverse impact to water bodies	Complete a baseline water quality survey of site surface waterways and dams	Prior to construction for: suspended solids, conductivity, pH and dissolved oxygen.	Site Environmental Representative
		Monitor water quality to identify contamination from construction processes and any additional control measures that may be required.	Weekly for suspended solids, conductivity, pH and dissolved oxygen and as triggered by wet weather events	Site Environmental Representative
		Check for localised erosion on site. Particular attention will be paid to access tracks on relatively steep gradients, near waterways and waterway crossings	Weekly and as triggered by wet weather events	Site Environmental Representative
		Monitor water holding areas and sediment fencing, check for integrity of control structures	Weekly for suspended solids, conductivity, pH and dissolved oxygen and as triggered by wet weather events	Site Environmental Representative
Drainage	New drainage lines not controlled	Visual Inspection every two days when earth moving is occurring.	Install appropriate sediment controls on new drainage lines	Site Supervisors and Foremen
Haul Roads	Monitor Dust	Visual Inspection	Mobilise water cart to wet haul roads	Site Supervisors and Foremen
	Soil on Paved Roads	Daily Visual Inspection	Install wheel wash and rumble grid	Site Supervisors and Foremen
Cut off and diversion drains	Water not diverted away from sensitive areas	Weekly Visual Inspection	Replace or repair damaged drains, redesign ineffective drains, relocate drains	Site Supervisors and Foremen

Area of risk	Purpose	Monitoring activity	Frequency or Action	Personnel Responsible
Stream crossings	Unstable, releasing sediment or soil into stream	When in use, minimum weekly inspections.	Stop use until installation has been redesigned	Site Supervisors and Foremen
Stockpiles and bare slopes	Erosion and soil/ sediment leaving soil stockpiles	Weekly visual Inspections	Minimise exposure to run-off and action of wind. Ensure stabilisation measures are effective	Site Supervisors and Foremen
Sediment controls, sediment basins, silt fences and traps	Determine whether the installation is operating effectively, whether sediment needs to be removed from structure	Conduct regular inspections to ensure installations are working effectively (see Section 7.4)	Weekly and as triggered by wet weather events	Site Environmental Representative Site Supervisors and Foremen
		Measure turbidity on the input and output side of control devices during wet weather inspections	As triggered by wet weather events	Site Environmental Representative
Concrete batching plant	Prevent adverse impacts to surrounding surface water	Ensure that wastewater is contained within the concrete batching plant.	Daily	Site Environmental Representative Site Supervisors and Foremen
		Inspect bunds, collection pit and recycling storage tanks to ensure these are functioning properly and that the collection pit is kept at a minimum level	As triggered by wet weather events	Site Environmental Representative Site Supervisors and Foremen
		Monitor wet weather discharges for pH and suspended solids.	As triggered by wet weather events	Site Environmental Representative
Domestic wastewater systems	Prevent adverse impacts to surrounding surface water resulting from overflow events	Inspect wastewater containment to ensure capacity is not compromised	Daily	Site Environmental Representative

For the purposes of monitoring a 'wet weather event' will be considered to be 10mm of rainfall in 24hours.

11.3 Maintenance and Remediation

Regular and on-going maintenance of site erosion controls will occur throughout the construction phase of the project to help ensure the environmental protection measures outlined in section 6 of this plan are achieved.

Controls structure maintenance and remediation activities will include:

- Maintenance of sediment controls and remediation of areas of identified erosion, this will generally occur:
 - On a weekly basis (if required) during fine weather, or
 - As required to prevent release of contaminants and further erosion during wet weather events,
 - Cleaning of sedimentation basins will occur when the accumulated sediment has reduced the basins capacity by more than 30% as indicated by the depth indicators.
- Cleaning of all drains where the drains capacity is significantly reduced, this will typically involve removal of excess silt, vegetation and any litter.

Where localised erosion is identified on the Project site, the area is to undergo remediation as soon as practicable to prevent further erosion and the contamination of downstream receiving environments.

11.4 Post Construction

Erosion and Sediment controls will only be removed once the area of disturbance is deemed to have been stabilised by the Site Environmental Representative. All remediated areas will be monitored monthly during wind farm operation for any evidence of compromise or failure of rehabilitation measures including evidence of soil erosion, subsidence or backfilled trenches and discharge of turbid water. Problems noted will be recorded and rectified as soon as practicable.

12 Glossary and abbreviations

CMA	Catchment Management Authority
DDWF	Dundonnell Wind Farm
EMP	Environmental Management Plan
EPA	Environment Protection Authority Victoria
GHCMA	Gleneilg Hopkins Catchment Management Authority
HHS	Hydrocarbon and Hazardous Substances
the Planning Permit	Planning Permit No. 2015/23858
SEPP	State Environment Protection Policy
SEWQMP	Sediment, Erosion and Water Quality Plan

Appendix E – Hydrocarbon and Hazardous Substances Management Plan



Dundonnell Wind Farm

Hydrocarbon and Hazardous Substances Management Plan

Revision E

27/11/2018

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Revision History

Revision	Changes	Date	Prepared By	Approved By
A	Document Developed	26/03/2018	JR	ED
B	Updated to address comments and EES requirements	07/05/2018	JR	ED
C	Updated to address TILT comments	06/06/2018	ED	ED
D	Updated for Agency Review	20/06/2018	CL	MG
E	Updated in response to agency comments	27/11/2018	ED	CL

1 Introduction

This Hydrocarbon and Hazardous Substances Management Plan (HHSMP) has been prepared by Zenviron Pty Ltd, on behalf of Dundonnell Wind Farm Pty Ltd, in relation to the Dundonnell Wind Farm.

The Dundonnell Wind Farm was approved by the Minister for Planning in July 2016 under Planning Permit 2015/23858 (the Planning Permit), issued 23 October 2016.

This HHSMP has been prepared in accordance with of Condition 43 of the Planning Permit and is generally in accordance with Chapter 25 of the Dundonnell Wind Farm EES (June 2015). The purpose of this plan is to define the management of hazardous materials throughout the construction phase of the Dundonnell Wind Farm Project (the Project). Management and mitigation measures are outlined throughout this plan to minimise potential environmental impacts. The requirements for the HHSMP are set out in the Planning Permit conditions presented in Table 2.

2 Objectives, key issues and statutory requirements

Table 1 – Summary of objectives, key issues and relevant statutory requirements.

Objectives	To provide practical procedures for storing and handling hazardous material and substances on site during construction and operations.
Key Issues	<ul style="list-style-type: none"> • Protecting community amenity and site personnel from the use of hazardous materials. • Protecting beneficial uses of air, land, water, human and environmental health, from the impacts of hazardous materials. • Identification of hazardous materials, handling and storing hazardous materials. • Design criteria for hazardous materials storage facilities. • Spills monitoring and reporting.
Relevant legislation, standards and/or guidelines	<ul style="list-style-type: none"> • Dangerous Goods Act 1985 • Dangerous Goods (Storage and Handling) Regulations 2012 • Dangerous Goods (Transport by Road or Rail) Regulation 2008 • Code of Practice for the storage and Handling of Dangerous Goods 2013 • Environment Protection (Industrial Waste Resources) Regulations 2009 • Environment Protection Industrial Waste Resource Guidelines 2017: Section 6.2 Soil Hazard categorisation and management, • Environment Protection Industrial Waste Resource Guidelines 2017: section 6.3 Solid Industrial waste hazard categorisation and management. • EPA Publication 347.1: Bunding Guidelines 2015 • EPA Publication 480: Best Practice Environmental Management – Environmental Guidelines for Major Construction Sites, Section 8.4 Storage of Chemicals and fuels, 1996 • Occupational Health and Safety Act 2004 • Code of Practice for Managing Risks of Hazardous Chemicals in the Workplace, 2012 • Occupational Health and Safety Regulations 2017

	<ul style="list-style-type: none"> • Bunding Guidelines, EPA Publication 347, 1992 • Planning and Environment Act 1987 • Moyne Shire Planning Scheme • Environment Protection Act 1970 • EPA Publication 1589: Contaminated soil – treatment and disposal 2015 • State Environment Protection Policy (Prevention and Management of Contaminated Land) • Standards Australia, 2017, Australian Standard 1940:2017 – The storage and handling of flammable and combustible liquids • Standards of Australia 2007, Australian Standard 3833:2007 – The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers • Australian Code for the Transport of Dangerous Goods by Road and Rail Edition 7.6 – Consultation draft (Dec 2017)
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3 Planning Permit Requirements

This plan has been developed in accordance with condition 43 (a-b) of the Planning Permit. The table below identifies the requirements of this condition and the relevant section of this plan which addresses the relevant condition.

Table 2 - Relevant planning permit conditions from the Planning Permit (Moyne Shire Council).

Condition 43	Requirement	Relevant section
(a)	The hydrocarbon and hazardous substances plan must include: Procedures for any on-site, permanent post-construction storage of fuels, lubricants, waste, oil or other hazardous substances or potential contaminants to be in bunded areas; and	Section 5
(b)	Contingency measures to ensure that any chemical or oil spills are contained on-site and cleaned up in accordance with EPA requirements.	Section 6

4 On-Site Hazardous Materials

A number of potentially hazardous chemicals/materials will be used and stored on the Project during the construction and operation phases. These materials will require careful management in their storage and handling to protect both the environment and on-site personnel.

The following substances are expected to be stored, used and/or created on site during the construction and operations phases:

- Aggregates
- Agricultural pesticides and/or herbicides
- Alkaline wastewater produced from concrete batching activities
- Coolants
- Chemicals for cleaning equipment and parts

- Cement and concrete admixture chemical
- Explosives for blasting rock material
- Liquid fuels including diesel, petrol and gas (LPG)
- Lubricating and hydraulic oils
- Oxygen and acetylene gas, paints and chemical cleaner will be general in use.
- Waste and effluent from amenities

A register of these items will be stored and maintained on site, this is discussed in further detail in section 5.2 below.

5 Storage requirements

5.1 Procedure for the proper handling and storage of hazardous materials on-site

During construction and operations, the wind farm's Environmental Representative will ensure that all contractors and employees store and handle dangerous goods and hazardous substances in accordance with the Dangerous Goods (Storage and Handling) Regulations 2012 to prevent contamination risks.

Area's in which dangerous goods and hazardous substances are to be stored will be bunded to appropriate Australian Standards. General requirements include:

- Volumes less than 10,000L: At least 100% of the largest container plus 25% of the storage capacity up to 10,000L;
- Volumes greater than 10,000L:
 - Mixed classes of dangerous goods: At least 100% of the largest container plus 25% of the storage capacity up to 10,000L together with 10% of the storage capacity beyond 10%;
 - Flammable and combustible liquids: At least 100% of the volume of the largest package plus 25% of the storage capacity up to 10,000L together with 10% of the storage capacity between 10,000L and 100,000L, and 5% above 100,000L.

5.2 Storage Facilities

During construction, the storage, usage and handling of Hydrocarbons and Hazardous Substances (HHS) will be managed according to AS1940:2017 and AS3833:2007. HHS brought onto site will have a known classification and incompatible materials will be segregated for storage.

HHS will be labelled according to signage designated by the Globally Harmonised System of Classification and Labelling of Chemicals (GHS).

The volumes defined as 'Minor Storage' quantities for flammable liquids and combustible liquid under AS1940:2017 for commercial buildings, factories, workshops, hospitals and warehouses are presented in table 3. Flammable liquids are separated into Packing Groups (PGI or PGII, PGIII) and combustible liquid in Class (C1, C2).

Table 3 – Minor Storage standards – AS1940:2017

Location	Flammable liquids		Combustible liquid
	PGI or PGII	PGIII	C1, C2
Indoors	10L per 50m ² of floor space, but 5L for any tenancy of less than 50m ² area.	25L per 50m ² of floor space but 25 L for any tenancy less than 50m ² area.	500L total C1 and C2 per 50m ² of floor space but 500L for any tenancy less than 50m ² area.
Outside the building			

Location	Flammable liquids		Combustible liquid
	PGI or PGII	PGIII	C1, C2
(a) in attached outhouses or sheds if separated by a partition having an FRL of 60/60/60; or	250L	1L per 1 m ² of floor space with no more than 500L in any 500m ² area	2,500L
(b) outside, or in a detached shed or outhouse separated from the factory or workshop by at least 1m	1L per 2 m ² of floor space with no more than 250L in any 500m ² area	1,400L in tanks not over 700L each, or in packages	5,000L

Minor storage on open land will adhere to the following:

- Liquid will be kept at least 1m from any boundary, workshop, dwelling or protected place, body of water, watercourse or environmentally sensitive area
- The ground around the store will be kept clear of combustible vegetation or refuse for a distance of at least 3m
- Any potential flow of spillage will be prevented from reaching a protected place, drainage line or property by such means as the use of natural ground slope or the provision of a diversion channel, kerb or bund.

An appropriate SDS will be required for all hazardous substances kept on site. These will provide specific guidance on handling the relevant HHS.

5.2.1 Rehabilitation

When a HHS storage area is determined to no longer be required, the Project Manager shall ensure that the affected area is fully rehabilitated; and any potentially contaminated soil or other materials are disposed of in accordance with EPA requirements. For example, at the end of the appropriate period during construction the on-site concrete batching plant will be decommissioned, including any HHS storage areas.

5.3 Document Management

A Hazardous Chemicals Manifest shall be maintained and stored on site to ensure that a reliable estimate of hazardous materials present on the Project can be accessed quickly in case of an emergency and also provided to the relevant regulatory authorities (e.g. Work Safe Victoria) and relevant stakeholders who should receive it (e.g. CFA, host landholders).

An SDS Repository shall also be maintained to ensure that all relevant safety information for HHS kept on the Project can be retrieved rapidly in case of an accident, incident or any emergency situation.

Every hazardous material brought onto Site shall be entered into the Hazardous Chemicals Manifest and its current SDS shall be added to the SDS Repository.

The Project Environmental Representative shall:

- Prepare a Hazardous Chemicals Manifest using the pro-forma provided in Appendix A: Hazardous Chemicals Manifest;
- Ensure that the original of the current Hazardous Materials Manifest is stored in a suitable location, preferably in an accessible office on Site;
- Ensure that copies of the current Hazardous Chemicals Manifest is circulated to all locations specified in the Emergency Response Plan of the EMP;

- For every HHS on the Project, inspect and record the quantity held and the suitability of its storage facility at least weekly;
- Provide an update of the Hazardous Chemicals Manifest immediately upon receipt of;
 - significant quantities of any HHS, or
 - a new HHS that has not previously been stored/used on Site.
- Ensure that the SDS Repository contains the most current version of the SDS for all HHS held on the Project; and
- Ensure that copies of the SDS Repository are available at the appropriate HHS storage areas;

6 Environmental Protection Measures

6.1 Identification of potential hydrocarbons and hazardous substances incidents

The activity areas in which there is a potential for Hydrocarbon and Hazardous Substances (HHS) incidents to occur are as follows:

- Transport routes of HHS to and from site,
- Turbine locations,
- Associated infrastructure and compound areas.

Potential HHS incidents include,:

- Release of HHS stored on site.
- Release of HHS during transport operations (primarily fuels and lubricants),
- Release of HHS during refuelling activities,
- Release of construction waste and potentially contaminated construction waste.

6.2 Prevention of HHS incidents

Measures required to prevent the release of HHS are set out in the following documents:

- National Transport Commission Code for the Transport of Dangerous Goods by Road and Rail (NTC, 2017) – transport of HHS to and from site
- Standards Australia, 2017(AS1940:2017) – storage and usage of HHS
- Standards Australia, 2007 (AS3833:2007) – storage of chemicals.

The appropriate SDS for each HHS will also provide guidance for the handling of specific HHS materials. A series of management measures for HHS transport are discussed in greater detail below.

6.2.1 Transport to and from site

All HHS will be appropriately transported and stored during construction to minimise the potential for release or impact to the environment.

It is noted that during the construction phase the risk of an incident will be significantly higher than during the operations phase due to a greater amount of vehicle movements and a greater volume of HHS temporarily stored on the Project. Special care will be taken to ensure that:

- HHS storage areas are clearly labelled in accordance with relevant guidelines and regulations (placarding on site entrance as required),
- Bulk fuel storage is located away from highly trafficked areas and has all appropriate controls instituted as per the relevant guidelines and legislation,
- Site inductions will clearly inform/identify contractors and visitors of HHS storage areas and any site-specific controls practices.

6.3 Mitigation of HHS incidents

The general procedures for mitigating HHS incidents will be similar for both the construction and operation and maintenance phases. The mitigation measures will be in accordance with EPA Victoria requirements, in particular those defined within:

- EPA Victoria (1996) Environmental Guidelines for Major Construction Sites, Publication 480
- EPA Victoria (2015) Bunding, Publication 347.1.

Mitigation procedures specific to materials will be governed by the appropriate SDS.

Incidents or accidents involving the mishandling, transportation or inadequate storage of hazardous substances will be investigated and appropriate remedial action implemented including the following general steps:

1. Identify incident or non-conformance,
2. Immediately rectify if safe to do so, based on the SDS instructions for the material/s in question,
3. Inform appropriate persons, including internal and external stakeholders,
4. Complete incident report, update register and determine appropriate corrective actions,
5. Implement corrective actions and re-inspect to ensure implementation is effective.

Rectification actions will generally involve physical containment and spill clean-up (as described in greater detail in section 6.4) as well as notification to relevant authorities as described in section 6.5. All rectification actions should take into account the controls identified within the SDS of the substance involved.

6.3.1 Physical containment

A loss of containment of HHS will initially be controlled by bunding.

Bunding and compound requirements are detailed in Section 5.8 of AS1940:2017, all site bunding must be adequate to contain leakage or spillage and prevent it from contaminating soil or drainage systems. Specifically, bunding capacity will be the size of the largest storage vessel plus any fire water over a 20-minute period.

To prevent the movement of HHS into drainage lines, turbine positions and tracks will be located to avoid any water storage dam on-site and permanent storage at the maintenance facilities will be designed to the requirements of AS1940:2017 with site specific risks (i.e. high intensity rainfall, high lightning occurrence) taken into account.

6.3.2 Clean up

The project will have specific procedures for dealing with the potential release of specific HHS on-site, these procedures will be guided by information contained in the relevant SDS. Employees handling, transporting or utilising hazardous materials will be trained in emergency response procedures for spill events.

Spill clean-up kits will be kept within the vicinity of the worksite where such hazardous materials are used and stored.

A spill kit may consist of:

- a) A chemical resistant bin (metal or HDPE) with a secure lid;
- b) Broom, shovel, face shield, chemically-resistant gloves;
- c) Absorbent material in several forms: booms, pads, kitty litter;
- d) Contaminated soil collection bag/s;
- e) Cable ties or similar fastener,
- f) A suitable respirator.

Appropriate persons should be contacted as soon as practicable following detection of any release or non-conformance. Emergency contact details are provided in Table 5, and will be provided to personnel during onsite inductions.

Table 4 - Emergency contact details

Contact	Phone number
Police	000
Country Fire Authority	000
Ambulance	000
Moyne Shire Council	1300 656 564
EPA Victoria	1300 372 842

6.4 Measures to ensure compliance with EPA requirements

The Environmental Representative will be responsible for inducting all personnel working with hazardous substances in regard to notification and reporting procedures for a spill or incident (refer to Section 8 of the EMP for Environmental Representative responsibilities). The Environmental Representative will ensure the business hours and after hours contact details for the Site Manager and emergency services are displayed on the onsite notice board and at the entry points (gates) together with the Fire Prevention and Emergency Response Plan at all times in the events of a spill or incident.

The following steps will be taken to ensure any spills or leaks of hazardous materials are cleaned up in accordance with the EPA Publication 480 requirements:

1. Stop the activity and/or flow that created the spillage without endangering yourself;
2. If the hazards are unknown, identify the product and assess the risk using the Safety Data Sheet (SDS) and/or the packaging material. Check the warning signs and its environmental and safety hazards;
3. Secure the area in the case of flammable goods or toxics substances and ensure that no sources of combustion are present;
4. Select suitable Personal Protective Equipment (PPE) to safely respond to the spill. If the material is unknown, assume the spill to be toxic;
5. Assess the extent of the spill in relation to the volume spilt and the immediate threats to the environment. Block, divert, or contains the spill (with socks or booms);
6. Install boom and absorbent materials to contain the spill if spilled to water;
7. Assess the incident response (request assistance if required). Once under control, reassess the situation and develop an action plan for clean-up;
8. Implement a clean-up action plan including an assessment of an extent of spill and any soil contamination;
9. Clean-up any contaminated materials with the appropriate absorbent mats, pillows, shovels and place in secure containment. If necessary, obtain an analysis of the material collected; and
10. Dispose of collected materials by an EPA licensed transporter or EPA licensed treatment facility as soon as practicable.

6.5 Environmental Incident notification and reporting

The Environmental Representative will ensure that all spills are recorded and reported to the Main Contractor's Site Manager identifying;

- the chemical,
- location
- volume spilt for significance spillages

- and cause if the spillage or leakage

An incident report form will be filled out, and given to the site Environmental Representative, the on-site management team will be responsible for informing their respective level of management about the nature of the spill or leak. Whilst large volumes of chemicals will not be stored on site, should a significant spill occur that could lead to major environmental damage, the on-site personnel will notify the relevant Corporate Manager who in turn will notify the EPA, Site Manager and other emergency services by dialling the EPA pollution hotline: 1300 372 842 for an environmental incident.

All personnel on site will follow any instructions given by the EPA and/or emergency services and the incident reviews should identify a new additional control where required to reduce risks of recurrence and may also include review of similar facilities within the project area.

7 Monitoring

On-going monitoring of the storage and management of HHS on site will be undertaken throughout the construction and operation phases of the project in accordance with Table 6.

Table 5 - Project Monitoring objectives

Objectives	Procedures/ control measures	Monitoring requirements	Frequency	Responsible Site Personnel
Design and construct HHS storage areas in accordance with relevant regulations and associated guidelines	All HHS storage areas shall be designed and installed in accordance with AS1940:2017 and EPA Bunding Guidelines	Inspect presence of bund, volume of materials and bund integrity Ensure hydrocarbons and hazardous substances are stored in accordance with guidelines and standards	Weekly	Site Environment Representative
No spillage of HHS beyond containment areas No discharge of HHS to land or natural waterways	Refuelling and use of HHS must occur only on hardstands and/or bunded areas or where required conducted with spillage/leakage presentation measures (e.g. drip tray).	Spills recorded as a non-conformance where reporting limits are triggered	Daily	Site Environment Representative
Design and construct refuelling areas in accordance with relevant regulations and guidelines	Designated refuelling areas are designed in accordance with AS1940:2017.	Inspect presence and appropriateness of control measures and their integrity	Weekly	Site Environment Representative

8 Glossary and abbreviations

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DDWF	Dundonnell Wind Farm
EMP	Environmental Management Plan
EPA	Environment Protection Authority Victoria
FRL	Fire Resistance Level
HHS	Hydrocarbons and Hazardous Substances
HHSMP	Hydrocarbon and Hazardous Substances Management Plan
NTC	Australian Code for the Transport of Dangerous Goods by Road and Rail Edition 7.6 – Consultation draft (Dec 2017)
the Planning Permit	Planning Permit No. 2015/23858
SDS	Safety Data Sheet

Appendix A – Hazardous Chemicals Manifest

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Hazardous Chemicals Manifest

Manifest of Schedule 11 Hazardous Chemicals

Company (PCBU):			
Address of premises:			
Date of preparation / revision:		Revision no:	

Emergency Contacts

Name:	Position:	Telephone:
		B/H:
		B/H:

Hazardous Chemicals Stored in Bulk (not in container e.g. stockpile) *delete if not required*

Storage Area	Proper shipping name	UN No.	Class / Division	Packing Group	Type	Design capacity	Diameter	Typical quantity
<i>Example:</i>								
DG Tank 1	Automotive Diesel	N/A	N/A	N/A	AGT	30,000L		20,000L

Hazardous Chemicals Stored in Tanks *delete if not required*

Storage Area	Proper shipping name	UN No.	Class / Division	Packing Group	Type	Design capacity	Diameter	Typical quantity

Packaged Storage Area 1 (for hazardous chemicals in containers/packages) *delete if not required*

Storage Area	Proper shipping name	UN No.	Class / Division	Packing Group	Type	Design capacity	Diameter	Typical quantity

UST – Underground storage tank

AGT – Aboveground storage tank

N/A – Not applicable

Appendix F – Fire Prevention and Emergency Response Plan

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Dundonnell Windfarm

Fire Prevention and Emergency Response Plan

Zenviron

December 2018

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Revision	Description	Date	Prepared By	Approved By
A	First draft circulated for agency comment	25/06/2018	C Hartley	P Douglass
B	Second draft circulated	21/09/2018	C Hartley	P Douglass
C	Final	11/12/2018	C. Hartley	P Douglass

Dundonnell Windfarm

Fire Prevention and Emergency Response Plan

Zenviron

December 2018

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INTRODUCTION

This Fire Prevention and Emergency Response Plan (FPERP) has been prepared by ERM and My Emergency Management (MyEM) for Zenviron Pty Ltd, on behalf of Dundonnell Wind Farm Pty Ltd, in relation to the Dundonnell Wind Farm (DDWF).

The Dundonnell Wind Farm was approved by the Minister for Planning in July 2016 under Planning Permit 2015/23858 (the Planning Permit), issued 23 October 2016.

This FPERP has been prepared in accordance with Condition 44 of the Planning Permit and is generally in accordance with Chapter 25 of the Dundonnell Wind Farm EES (June 2015). The purpose of this plan is to manage wildfire and emergency events to prevent injury, damage to property and assets and protect the environment.

The requirements of Condition 44 are met throughout the FPERP as follows:

Condition	Requirement	Plan Section(s)
44	The environmental management plan must include a fire prevention and emergency response plan prepared in consultation with and to the satisfaction of the CFA and DELWP. Consultation with the CFA must include consultation at the region and local level. The Moyne Shire Council must also be consulted in the preparation of the plan. The fire prevention and emergency response plan must be generally in accordance with the Emergency Management Guidelines for Wind Farms – Version 4, CFA February 2012, and must include:	-
(a)	Consideration of weather based threshold criteria for brigade call out and use of aerial appliances.	Section 5.3
(b)	Criteria for the provision of static water supply tanks solely for fire-fighting purposes, including minimum capacities, appropriate connections and signage.	Section 5.1 (Risk No. 6)
(c)	Procedures for vegetation management, fuel control and provision of firefighting equipment during declared fire danger periods.	Section 5.1 (Risk Nos. 5 & 6)
(d)	Minimum standards for access roads and tracks to allow access for fire fighting vehicle, including criteria for access to static water supply tanks for fire-fighting vehicles.	Section 5.1 (Risk No. 6)
(e)	A requirement that, within one month after the commencement of the operation of the wind energy facility, the operator of the wind energy facility facilitates a familiarisation visit to the site and explanation of emergency services procedures for: <ul style="list-style-type: none"> i. The CFA (including headquarters level, the CFA Regional Office and local volunteer brigades as specified by the CFA Regional Office); 	Section 5.1 (Risk No. 7)

Condition	Requirement	Plan Section(s)
	<ul style="list-style-type: none"> ii. Rural Ambulance Victoria; iii. Moyne Shire Council's Municipal Emergency Management Committee; and iv. Victoria Police. 	
(f)	Subsequent familiarisation sessions for new personnel of the organisation referred to in Condition 44(e) of a periodic basis as required.	Section 5.1 (Risk No. 7)
(g)	If requested, training of personnel of the organisations referred to in condition 44(e) in relation to suppression of wind energy facility fires.	Section 5.1 (Risk No. 7)

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2 EXISTING CONDITIONS

2.1 SITE DESCRIPTION

The DDWF is located in Western Victoria, 23 kilometres north-east of Mortlake and 21 kilometres west of Derrinallum (Refer to Figure 2.1). The site comprises an approximate area of 4,200 hectares, with a 220-hectare project footprint and across 11 farming properties. The site is within the Moyne Shire.

The wind farm site lies between private landholdings to the north, east and west, and the Woorndoo-Dundonnell Road to the south. The wind farm site includes the roadsides of Ennerdale Lane, Fashams Lane, Dohertys Lane, Post Office Lane and Dawes Lane.

Existing infrastructure at the site and on the surrounding land is predominately agricultural in nature and includes isolated dwellings, sheds, access tracks and fencing. Refer to *EMP Figure 1: Project Location*.

2.2 PROJECT DESCRIPTION

The Project will generally consist of the following components.

- Eighty turbine positions, including a 25-metre diameter base construction area and an adjacent 30 x 50 metre construction pad;
- The 5.5 metre wide turbine access tracks within the wind farm site including a network of 6-metre-wide underground 33 kV distribution cables that connect to the onsite substation;
- The major site access track, which runs from Woorndoo-Streatham Road to the wind farm site (5.5 metres wide);
- The equipment lay-down areas and site office in the western part of the site (200 x 200 metres);
- Temporary concrete batching plant (100 x 100 metres);
- Two proposed on-site quarry sites; and
- On-site electrical substation (150 x 200 metres).

The wind farm will be connected to the National Electricity Market via a 38km 220kV transmission line, and offsite substation, to the Mortlake Power Substation (MOPS). This infrastructure has been approved under a separate planning permit, and will be subject to a separate Environmental Management Plan. Refer to *EMP Figure 2: Indicative Site Layout Plan*.

3 LEGISLATIVE REQUIREMENTS & GUIDELINES

3.1 PLANNING PERMIT CONDITIONS

Condition 38 of Permit No. 2015/23858 sets out the general requirements for the EMP.

Relevant to the FPERP is that it:

- must be generally in accordance with Chapter 25 of the Dundonnell Wind Farm EES (June 2015);
- must be prepared in consultation with the CFA, MSC and DELWP; and
- must be in accordance with relevant EPA requirements and guidelines.

Condition 44 of the Planning Permit has specific regard to the requirement for a FPERP. It states:

'The environmental management plan must include a fire prevention and emergency response plan prepared in consultation with and to the satisfaction of the CFA and DELWP. Consultation with the CFA must include consultation at the region and local level. The Moyne Shire Council must also be consulted in the preparation of the plan.'

The fire prevention and emergency response plan must be generally in accordance with the Emergency Management Guidelines for Wind Farms – Version 4, CFA February 2012, and must include:

- b. Consideration of weather based threshold criteria for brigade call out and use of aerial appliances;*
- c. Criteria for the provision of static water supply tanks solely for fire-fighting purposes, including minimum capacities, appropriate connections and signage;*
- d. Procedures for vegetation management, fuel control and provision of firefighting equipment during declared fire danger periods;*
- e. Minimum standards for access roads and tracks to allow access for fire fighting vehicle, including criteria for access to static water supply tanks for fire-fighting vehicles;*

- f. *A requirement that, within one month after the commencement of the operation of the wind energy facility, the operator of the wind energy facility facilitates a familiarisation visit to the site and explanation of emergency services procedures for:*
- i. *The CFA (including headquarters level, the CFA Regional Office and local volunteer brigades as specified by the CFA Regional Office);*
 - ii. *Rural Ambulance Victoria;*
 - iii. *Moyne Shire Council's Municipal Emergency Management Committee; and*
 - iv. *Victoria Police.*
- g. *Subsequent familiarisation sessions for new personnel of the organisation referred to in Condition 44(e) of a periodic basis as required;*
- h. *If requested, training of personnel of the organisations referred to in condition 44(e) in relation to suppression of wind energy facility fires.'*

All of the above matters are addressed in Section 5 of this FPERP.

3.2 CHAPTER 25 OF THE DDWF EES

Chapter 25 of the DDWF EES (June 2015) has regard to the Environmental Management Framework (EMF) and sets out the framework for the development of various EMP's as required by Conditions 38-49 of the Planning Permit.

Table 24-18 of Chapter 25 has regard to fire management, and includes the objective of the fire management plan and identifies potential impacts/ risks, and mitigation measures in relation to the plan.

These matters are addressed in the Fire and Emergency Response Mitigation Plan included in Section 5 of the FPERP.

3.3 OTHER LEGISLATION, GUIDELINES AND STANDARDS

Other relevant legislation, guidelines and standards are:

- National Emergency Risk Assessment Guidelines;
- CFA Act 1958;
- CFA Regulations 2014;

- *Building Interim Regulations 2017;*
- *Occupational Health & Safety Act 2004;*
- *Planning & Environment Act 1987;*
- *Dangerous Goods (storage and handling) Regulations 2011;*
- Australian Standard 1940 - 2017, The storage and handling of flammable and combustible liquids including fire protection equipment;
- Australian Standard AS/NZS ISO 31000:2009 Risk Management - Principle and Guideline; and
- Emergency Management Guidelines for Wind Energy Facilities, CFA, August 2017.

It is noted that the Emergency Management Guidelines for Wind Energy Facilities, CFA, August 2017 is an updated version of the Emergency Management Guidelines for Wind Energy Facilities May 2015. A review of the updated guidelines found only very minor changes relating to updating Government agencies names, i.e. DTPLI is now known as DELWP, very minor legislative amendments and deletion of two (2) fuel vegetation management prescriptions. None of the changes imposes any additional requirement or conditions from the May 2015 version.

4 **RISK ASSESSMENT METHODOLOGY**

4.1 **OVERVIEW**

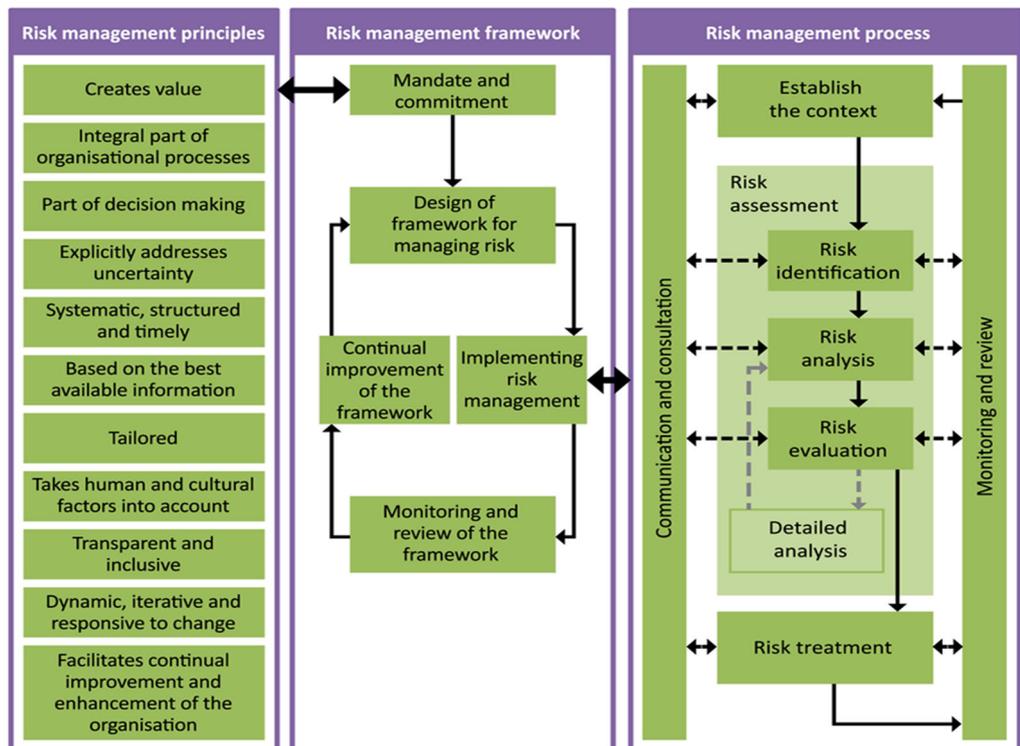
The methodology used in this FPERP is based on the National Emergency Risk Assessment Guidelines (NERAG) as it provides a contextualised emergency-related risk assessment method consistent with the *Australian Standard AS/NZS ISO 31000:2009 Risk management – principles and guidelines*. This methodology is also consistent with the CFA guidelines recommendation to undertake a hazard analysis and risk assessment in accordance with AS/NZS ISO 31000 Risk Management – principles and guidelines.

This type of assessment methodology within the established risk context provides a holistic approach to integrating fire protection systems with the development of a Fire Prevention and Emergency Response Plan. This should be supported by a CFA training program for responding CFA volunteer fire fighters to feed into the fire prevention, preparedness and response continuum of the identified hazards and risks within the assessment as part of their obligations to fire fighter safety under the *Occupational Health and Safety Act*.

Fire protection system is defined as the fire protection equipment and systems used to combat or mitigate any fires that may occur at the windfarm site.

Figure 4.1 – Risk Management Principles illustrates the risk management principles, framework and process as described in AS/NZS ISO 31000:2009.

Figure 4.1 Risk Management Principles



4.2

ESTABLISH THE CONTEXT

This stage involves conducting a fire risk assessment to identify and analyse all fire related hazards and risks within and relevant to the windfarm site and determine the most *practicable* risk and evidence-based *fire protection system* and other mitigation treatments to achieve an *acceptable level of risk*. This includes, where *practicable*, compliance with CFA Emergency Management Guidelines for Wind Energy Facilities.

Practicable means having regard to:

- the severity of the hazard or risk in question;
- the state of the knowledge about that hazard or risk and any ways of removing or mitigating that hazard or risk;
- the availability and suitability of ways to remove or mitigate that hazard or risk; and
- the cost of removing or mitigating that hazard or risk.

Acceptable level of risk means the level of human and/or material injury or loss from an industrial system or process that is considered tolerable by a community or authorities in view of social, regulation, economic and environmental cost benefit analysis.

FIRE AND EMERGENCY RESPONSE MITIGATION PLAN

This Fire Prevention and Emergency Risk and Mitigation Plan included below is intended to identify, analyse and provide risk mitigation treatment for each project activity based on three (3) main risk areas. These are:

- 1 - Construction phase,
- 2 - Operation phase, and
- 3 - As a result of bushfire.

This will ensure a holistic risk and evidence based approach to satisfy the requirement for the FPERP whilst also responding to the relevant sections of CFA Emergency Management Guidelines for Wind Energy Facilities. The risk areas also respond directly to the key risk areas ('impacts') identified in Table 24-18 'Fire Management' of Chapter 25 of the EMF.

5.1 FIRE PREVENTION AND EMERGENCY RISK AND MITIGATION PLAN

Risk No.	Identified Risks With no consideration of risk mitigation treatments or controls in place	Risk Rating	Risk mitigation treatments	New Risk Rating
<i>Construction Phase</i> - The highest risk identified at the site is a grass fire during the construction phase and declared fire danger period which generally occurs between December and May each year.				
1	<p>Internal fires on site from welding, cutting and grinding or discarded cigarettes during the declared fire danger period:</p> <ul style="list-style-type: none"> Whilst these hazards will result initially in minor fires, in the absence of nearby / easily accessible fire firefighting equipment, i.e. water fire extinguisher, these fires could spread quickly, particularly under the influence of severe and above grass fire danger ratings; Fire spread beyond the site threatening adjoining properties, livestock and fencing; Require significant commitment of CFA resources and supporting emergency services. 	High	<ul style="list-style-type: none"> Standard construction management measures and restrictions will be applied on high fire risk activities (welding, cutting and grinding) during days the grassfire danger rating of severe or above; A 'hot work' policy will be adopted requiring a Hot Work Permit e.g. open flame work such as welding, cutting and grinding will not commence unless authority has been given by the Site manager or delegate. A "Hot Work Permit" will be completed prior to commencement of any work and remain current for 24 hours only'. Will have a minimum two (2) x 9 litre stored pressure water extinguishers or firefighting capability (i.e. water tanker) available and ready to operate always when welding cutting and grinding. Will adopt a work practice of no welding, cutting grinding or undertaking other work that emits a spark or flame during a day of total fire ban or during days when the grassfire danger rating is severe or above. Smoking will only be allowed in designated areas. 	Low
2	<p>Vehicle, machinery and equipment causing a grass fire from mechanical fault, leaking fuel, etc causing:</p> <ul style="list-style-type: none"> Depending on the grass fire danger rating, spread quickly across the landscape threatening livestock and local residence; Fire spread beyond the site threatening adjoining properties, livestock and fencing; Require significant commitment of CFA resources and supporting emergency services. Would potentially present a breach of Victorian law including Occupational Health and Safety Act, Planning & Environment Act and CFA Act. 	High	<ul style="list-style-type: none"> All flammable and combustible liquids will be stored and handled in accordance with the relevant sections of AS 1940 - 2017, The storage and handling of flammable and combustible liquids including fire protection equipment. Each vehicles and machinery working on site will be: <ul style="list-style-type: none"> free from faults and mechanical defects which could cause an outbreak of fire; fitted with a spark arrester; and carry a minimum of one (1) 9L water extinguisher. All site vehicles will only use the Site access tracks during the declared total fire ban period to minimise the likelihood of igniting grass. 	Low

Risk No.	Identified Risks With no consideration of <i>risk</i> mitigation treatments or controls in place	Risk Rating	Risk mitigation treatments	New Risk Rating
			<ul style="list-style-type: none"> The site construction manager and supervisors will install the Vic Emergency App and program in a watch zone of the surrounding area, so they are notified of a potential threat from a grass fire burning in the area during construction work. 	
<i>Operation Phase</i>				
3	<p>Internal fires on site from lightning strikes or cigarettes during the declared fire danger period resulting in a grass fire could:</p> <ul style="list-style-type: none"> Depending on the grass fire danger rating, spread quickly across the landscape threatening livestock and local residence; Fire spread beyond the site threatening adjoining properties, livestock and fencing; Require significant commitment of CFA resources and supporting emergency services. 	High	<ul style="list-style-type: none"> The likelihood of a lightning strike to the ground without rain resulting in a grass fire is assessed as 'Very Low'. Lightening conductors will be installed to ground strikes and to minimise ground ignition and damage to the WTG's. The site will have a strict smoking policy with <u>smoking only permitted</u> in designated cleared areas. 	Low
4	<p>WTG mechanism failure causing a wind turbine fire causing burning material to drop to the ground causing a grass fire:</p> <ul style="list-style-type: none"> Depending on the grass fire danger rating, spread quickly across the landscape threatening livestock and local residence; Fire spread beyond the site threatening adjoining properties, livestock and fencing; Require significant commitment of CFA resources and supporting emergency services. 		<ul style="list-style-type: none"> A WTG mechanism failure causing a wind turbine fire or resulting in a grass fire is rare. This is due to systems been designed to prevent or contain a fire through the following engineering designs: <ul style="list-style-type: none"> The WTG nacelle is designed to isolate it electronically, immobilising it mechanically and allow the fire to internally burn itself out; There are limited combustible material to burn, i.e. the oils used which include transmission and gearbox oils are non-hazardous and have a high flash point which can vary between 180°C to 236°C; To prevent transmission and gearbox oils reaching their flash point temperature and other parts overheating, WTG's are fitted with a monitoring system which will ensure that electrical, mechanical and hydraulic systems are functioning correctly; The system also allows for remote slow down or shut down of the WTG in the event the operating thresholds such as temperature or blade speed are reached, or an electrical fault is identified; and 	

Risk No.	Identified Risks With no consideration of <i>risk</i> mitigation treatments or controls in place	Risk Rating	Risk mitigation treatments	New Risk Rating
			<ul style="list-style-type: none"> Lightening conductors will also be installed to ground strikes and to minimise ground ignition and damage to the WTG's. 	
Bushfire				
5	<p>External crop / grass fire impacting the site during the declared fire danger period:</p> <ul style="list-style-type: none"> Could enter and spread across the Site under the influence of severe and above grassfire danger ratings; Threatening local properties, livestock and fencing; Require significant commitment of CFA resources and supporting emergency services. 	High	<ul style="list-style-type: none"> Cattle and sheep grazing will continue to provide ongoing and effective vegetation management and fuel control. Access road networks to each WTG's will meet the 5m wide performance criteria to create a network of firebreaks to assist with reducing the size and impact of fires, assist with fire appliance access and fire containment / control. Existing stone fences will provide an added fire management measures by acting as a heat shield stopping a grass fires forward rate of spread. WTG's will be clear of vegetation such as scrub, trees etc to a distance of 30m. (Clearance associated with the development of the project has allowed for this clearance, however if growth of native scrubs or trees occurs over the operational life of the project adjacent to turbines, and is required to be removed for fire safety, additional approvals will be obtained as/ if required). 22,500 L static water tanks should be strategically located at the main site entrance, substation and 2 x public road / main branch intersections to the satisfaction of CFA for use by responding fire appliances. 	Low
6	<p>Inadequate water supply, access and equipment for fire firefighting purposes could:</p> <ul style="list-style-type: none"> Prevents fire suppression by responding fire brigades from connecting easily and quickly into available on-site water supply delaying fire suppression response. Local CFA brigade are rural volunteers and therefore response times on site, could be up to and greater than 50 minutes and may not be able to respond if there are other fires in the surrounding area. Limited or difficult access to water supply fire appliances will delay a quick-fire attack and increase the risk of fire spread. 	High	<ul style="list-style-type: none"> Due to the potential local fire brigade's response times on the fire ground could be >50 minutes, the primary fire management approach will be fire prevention and spread minimisation. This will be achieved by implementing by the following: <ul style="list-style-type: none"> Refer risk No 1 for prevention of fire from welding, grinding, discarded cigarettes; Refer risk No 2 for prevention of fires from vehicles, machinery, etc; Refer risk No 3 for prevention of fire from lightning strikes or cigarettes during the declared fire danger period 	Low

Risk No.	Identified Risks With no consideration of <i>risk</i> mitigation treatments or controls in place	Risk Rating	Risk mitigation treatments	New Risk Rating
	<div style="border: 2px solid red; padding: 10px; text-align: center;"> <p>APPROVED FOR THE MINISTER FOR PLANNING</p> <p>SHEET 171 OF 301</p> </div>		<ul style="list-style-type: none"> ○ Refer risk No 2 for prevention of fires on site from welding and grinding during the declared fire danger period; and ○ Refer risk No 4 for fire engineering systems design to prevent and contain fires within WTG's. ● When the fire brigades arrive on scene, the following water supplies will be available to assist with control and extinguishment of grass and consequence fires: <ul style="list-style-type: none"> ○ Static water tanks of no less than 22,500 L effective capacity and the number and location will be strategically located at the main site entrance, substation and 2 x public road / main branch intersections to the satisfaction of CFA. ○ Water tank installed on a non-combustible foundation and has a cleared area around the tank perimeter (i.e. crushed rock or stone) to a minimum distance of 1m, will be plastic tanks. ○ It is worth noting that it has been a common practise of CFA to install plastic water tanks at rural fire stations across Victoria for the purpose of filling fire appliances. ○ The static storage tanks will be manually filled and if one to three are used, they be refilled within 10 working days of being used, or if more than 3 are used, be filled within 5 working days; or ○ If a water tank is used outside the declared fire danger period, the tank will be filled within 1 day of being used or prior to the declared fire danger period, whichever is the lesser. The hard-suction points will be provided with a suction point compatible with the local fire brigade and be positioned within 4m to a hard-standing area and capable of accommodating a vehicle of 15 tonnes; ○ An external water level indicator will be installed and visible from the hard-standing area, and directional signage to CFA standard will be fitted to assist with locating water tanks. If there are non-firefighting water tanks to be installed on the site, all firefighting water tanks will have water sign installed to allow them to be easily identified to CFA standard. 	

Risk No.	Identified Risks With no consideration of <i>risk</i> mitigation treatments or controls in place	Risk Rating	Risk mitigation treatments	New Risk Rating
	<div style="border: 2px solid red; padding: 10px; width: fit-content; margin: auto;"> <p>APPROVED FOR THE MINISTER FOR PLANNING</p> <p>SHEET 172 OF 301</p> </div>		<ul style="list-style-type: none"> • To ensure easy access by fire brigade to the site and water supplies, the following prescriptions will be implemented: <ul style="list-style-type: none"> ○ Road networks will be 5 metres in trafficable width and constructed so they are accessible in all weather conditions and capable of accommodating a vehicle of 15 tonnes; ○ The hard-suction points will be provided with a water tank suction point compatible with the local fire brigade and be positioned within 4 m to a hard-standing area capable of accommodating a vehicle of 15 tonnes; ○ As the landscape is predominantly flat to undulating, the average grade requirements will not be an issue, particularly as responding fire brigades will be rural tankers designed for off roads firefighting. <p>Note: These access roads will also act as fire breaks reducing the spread of grass fires and assisting the fires brigade with their containment and extinguishment.</p>	
7	<p>Failure of the wind farm operator to offer and provide familiarisation visit to the site and explanation of emergency services procedures and the relevant emergency services failing to accept the offer and participate could:</p> <ul style="list-style-type: none"> • Lead to confusion during a fire if they are unfamiliar with the fire prevention, mitigation treatments and response equipment provided escalating the fire emergency and impact and could put fire fighter at risk; • Would potentially present a breach of Victorian law including Occupational Health and Safety Act, Planning & Environment Act. 	High	<ul style="list-style-type: none"> • The wind farm operator will offer and if accepted, provide familiarisation visit to the site and explanation of emergency services procedures to the CFA, local brigades and the District Operations Officer as well as other key stakeholders within one (1) month after commencement of the operation of the facility and provide additional familiarisation visit for new personnel and ongoing training of personnel upon request. • The wind farm operator will provide CFA and other key stakeholders with a copy of site lay out detailing location of all WTG's, site entry points, access road networks, existing stone fences and water tanks. • CFA should use the familiarisation visit and this FPERP to develop Brigade, Group and District response plans and the District response plans along with this FPERP be presented to the Moyne Shire Council Municipal Fire Management Planning Committee and Municipal Emergency Management Planning Committee for their consideration and planning purposes. • CFA is also to provide the State Air Desk with a copy of site final layout, so they are aware of the existence and location of the wind farm. Layout should include details of the height of WTG's and infrastructure. 	Low

Risk No.	Identified Risks With no consideration of <i>risk</i> mitigation treatments or controls in place	Risk Rating	Risk mitigation treatments	New Risk Rating
			Note: key stakeholders may include local CFA brigades and DELWP fire fighters and district staff, SES, Victoria Police, Ambulance Victoria and Municipal Emergency Response Officer.	

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5.2 RESCUE AND EVACUATION

High Angle Rescue

Section 6 of CFA's Emergency Management Guidelines for Wind Energy Facilities advises 'CFA's rescue guidelines should be considered to enable safe rescue'. It appears this is referring to CFA high angle and confined space rescue guidelines which are intended for CFA operational response and training purposes and apply to a broad range of potential risk environments which CFA rescue operators may be called upon to respond and therefore their consideration is beyond the scope of this FPERP.

It is however the obligation of wind turbine construction companies and operators under section 21 of the Occupational Health and Safety Act to ensure, so far as is reasonably practicable, to provide and maintain a working environment that is safe and without risks to health when building, installing and maintaining WTG's.

CFA has the same obligation under section 21 of the *Occupational Health and Safety Act*, it is therefore recommended CFA ensures their rescue guidelines are reviewed and updated to ensure they reflect potential rescues involving WTG's.

Evacuation Procedures

Section 11 of CFA's Emergency Management Guidelines for Wind Energy Facilities advises- 'evacuation procedures for residents that may be impacted in the event of a nacelle fire should be informed of emergency procedures and recommended actions'. This section is confusing as there is no circumstances in which the impact of a nacelle fire would require the evacuation of any residents;

It is however important to note that recommending evacuation in the event of a grassfire which could be a consequence of a wind turbine fire is the role and responsibility of the incident controller and requires careful consideration and planning based on situation awareness including; existing weather conditions, fire location, direction and behaviour, rate of spread, safe evacuations routes etc. To prepare evacuation procedures and recommended actions to residents is well beyond the scope and authority of the FPERP and wind farm operators and could in fact put persons, acting on written generic evacuation procedures at serious risk.

5.3 CONSIDERATION OF WEATHER BASED THRESHOLD CRITERIA FOR BRIGADE CALL OUT AND USE OF AERIAL APPLIANCES

Condition 44a) of Permit No. 2015/23858 requires the consideration of weather based threshold criteria for brigade call out and use of aerial appliances (refer to Section 3.1 of the FPERP for further details). This matter is addressed as follows.

This permit condition requirement is not relevant nor possible for the facility owner to consider or action as they are matters for the CFA. This is based on the following:

Brigade call out

Brigade call out responses are predetermined by CFA response tables which are predetermined based on the level of hazards and risks and CFA protocols.

An example relating to weather based threshold criteria, CFA grass fire response tables are based on the fire danger ratings, i.e. on days of severe and above, a 3 x brigade response is common.

Notwithstanding, in the event of a fire involving a wind turbine, the same CFA response tables could apply and the incident controller, once arriving on scene and after undertaking a dynamic risk assessment, would call for additional resources if required. This is standard response protocols for fires.

To assist the local fire brigade officers / incident controllers to effectively respond to fires involving WTG's, it is proposed CFA use this FPERP to prepare Brigade and Group response plans to the site and training.

Aerial appliance

Aerial appliances relate to hydraulic platforms and turn table ladders, as well as firefighting air craft.

With regard to hydraulic platforms and turn table ladders, attempting to site and set-up any aerial appliance in an open paddock on unknown ground (soil) stability without pre-installed engineered stabiliser pads at each WTG would be a breach of section 21 of the *Occupational Health and Safety Act*. As such hydraulic platforms and turn table ladders are not considered as a response appliance to this wind farm site.

With regard to firefighting air craft, response is problematic based on state operational priorities, and due to the challenges and hazards associated with turning wind turbine blades.

If a firefighting air craft is responding to a fire involving a wind turbine or a consequence grass fire, air operations would be determined by the air attack supervisor and operational policy and protocols and therefore is beyond this FPERP.

However the CFA is to provide the State Air Desk with a copy of the site final layout provided by the wind farm operator, so they are aware of the existence and location of the wind farm. The layout is to include details of the height of all WTG's.

Monitoring and reporting of the FPERP will be in accordance with Section 6 of the endorsed Dundonnell Wind Farm Environmental Management Plan.

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Appendix G – Blasting Management Plan

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Dundonnell Wind Farm

Blasting Management Plan

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Revision G
27/11/2018

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Revision History

Revision	Changes	Date	Prepared By	Approved By
A	Document Developed	12/04/2018	JR	ED
B	Updated to address comments and EES requirements	07/05/2018	JR	ED
C	Draft updated to address TILT comments	12/06/2018	ED	ED
D	Updated for Agency Review	20/06/2018	CL	MG
E	Updated in response to agency comments	20/09/2018	DH	ED

F	Updated in response to agency comments	11/10/2018	ED	MG
G	Updated in response to agency comments	27/11/2018	ED	CL

1 Introduction

This Blasting Management Plan (BMP) has been prepared by Zenviron on behalf of Dundonnell Wind Farm Pty Ltd, in relation to the Dundonnell Wind Farm.

The Dundonnell Wind Farm was approved by the Minister for Planning in July 2016 under Planning Permit 2015/23858 (the Planning Permit), issued 23 October 2016.

This BMP has been prepared in accordance with of Condition 45 of the Planning Permit and is generally in accordance with Chapter 25 of the Dundonnell Wind Farm EES (June 2015). The purpose of this plan is to provide guidance for the preparation of task specific blasting plans, and ensure a safe and risk controlled plan for explosive blasting is in place.

2 Objectives, key issues and statutory requirements

Table 1 – Summary of objectives, key issues and relevant statutory requirements.

Objectives	<p>The objectives of this Blasting Management Plan are to:</p> <ul style="list-style-type: none"> • Provide guidance for the preparation of task specific blasting plans; • Ensure a safe and risk controlled plan for explosive blasting; • Ensure blasts do not harm people in the area, and the limit damage to the environment.
Key Issues	<ul style="list-style-type: none"> • Identifying the location of blasts relevant to sensitive receptors in the surrounding area. • Management of over blast, which if unmanaged can impact on surrounding areas. • Managing potential impact to groundwater and the surface water recharge from drill and blasting, if not managed correctly
Relevant legislation, standards and/or guidelines	<p>Australian Standard 2187.2 – (2006): Explosives – Storage and use. Part 2: Use of explosives and Appendix K – demolition of structures</p> <p>Resource Safety (WA) guide, Guide to blast plan preparation, including mining operations</p> <p>WorkSafe Victoria Guidance Note: Safe Distances when using blasting explosives</p>

3 Permit condition requirement

Table 2 - Relevant planning permit conditions from Permit No. PA2015/23858 (Moyné Shire Council).

Permit condition	Permit Requirement	Relevant section
45.	Where blasting is proposed by the Wind Energy Facility developer, the environmental management	This Document

Permit condition	Permit Requirement	Relevant section
	plan must include a blasting management plan. The blasting management plan must include:	
a.	Name and qualification of the person responsible for blasting;	Section 4
b.	A description of the location of where explosives will be used;	Section 5.1
c.	A plan showing the location of every licensed bore on any property with a boundary within 1km if the location of the blasting;	Section 5.1
d.	Identification and assessment of any potentially sensitive site within 1km of the location of the blasting, including the procedure for pre-blast and post-blast qualitative measurement or monitoring of the effects of the blasting on such sites;	Section 5.1 Section 5.2 Section 6.3 Section 6.4
e.	The procedure for site clearance and post-blast re-occupation;	Section 6.3.4
f.	The procedure for the storage and handling of explosives;	Section 6.2
g.	A requirement that blasting only can occur after at least 48 hours prior written notification of the intention to undertake blasting has been given to the occupants of the properties which are located in whole or in part within 1km of the location of the proposed blasting; and	Section 6.3.1
h.	A requirement that blasting only be undertaken between the hours of 8am and 4pm.	Section 6.3

4 Responsibility for blasting

The Contractor will ensure that the blasting Contractor is suitably licenced (holds Victorian Licence to Use Blasting Explosives), experienced and qualified (a list of approved course providers is available at worksafe.vic.gov.au and from WorkSafe offices) and that the required guidelines and procedures are followed including this Blasting Management Plan. Mr David Steven (Lic. No.: 002401421603) from Hamiltons Blasting Services is the nominated Blasting Contractor. To satisfy Condition 45 a) of Planning Permit No. 2015/23858, any changes to the details of all persons responsible for blasting will be notified to the responsible authority prior to the commencement of blasting.

The Civil Contractor will ensure that this Blasting Management Plan is reviewed when required to reflect any changes. The Blasting Contractor will maintain a daily tally of explosives delivered and liaise with the civil contractor about upcoming blasting events so that the surrounding landowners can be notified through the client. Any complaints regarding blasting will be handled by the client, who can communicate directly with the persons involved in the complaint.

5 Blasting location

Due to the geotechnical conditions within the site is anticipated that blasting is likely to be required to deal with areas of localised hardness at a number of turbine locations. As this will result in multiple sensitive

receivers occurring within 1km of proposed blasting, the specific sensitive receivers which occur within 1km of a turbine is summarised in Table 3 below including dwellings, heritage sites, licenced bores and potential broлга breeding habitats. These sensitive areas are shown in EMP Appendix M Figure 2 Site Constraints.

Table 3 - Proposed blasting locations within DDWF site and adjacent sensitive receivers

Blasting location	Sensitive receivers within 1km				Considered sensitive for blasting (Yes/No)
	Dwelling	Heritage Site	Licenced Bore	Broлга breeding wetland	
Substation and Batching plant	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
A06	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
B08	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No
A07	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Yes
B07	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No
B06	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No
A08	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Yes
A02	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
B05	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No
A01	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
A04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
A03	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
B01	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
B03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No
C02	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
C03	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
C05	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
B02	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No
C06	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
C01	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
C13	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
C04	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
C11	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
C07	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
C14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No
C10	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes

Blasting location	Sensitive receivers within 1km				Considered sensitive for blasting (Yes/No)
	Dwelling	Heritage Site	Licensed Bore	Brolga breeding wetland	
C09	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
F02	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
C12	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
D03	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
F01	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
D02	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
C15	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
D09	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
C08	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
C16	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
F03	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
H02	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
D08	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
G01	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
H01	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
A05	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
E01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
F04	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
D04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
D10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
D11	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
H03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No
D05	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
F09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No
E04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
G02	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
F05	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
E02	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
F06	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
D06	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
E03	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes

Blasting location	Sensitive receivers within 1km				Considered sensitive for blasting (Yes/No)
	Dwelling	Heritage Site	Licensed Bore	Brolga breeding wetland	
F07	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
F10	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
F08	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
E05	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
D07	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
G03	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
G04	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
E06	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
D01	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
E08	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Yes
G07	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
G06	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
H04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
G08	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
E07	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Yes
G05	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
G09	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
H06	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes
G10	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
H05	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes
H07	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No
H08	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No
H09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No
B04	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No

5.1 Sensitive receivers

There are a number of residences, licenced bores and heritage sites within a 1km radius of the proposed turbines on the project site, as well as known brolga breeding wetlands; the locations of these receivers relative to the Dundonnell Wind Farm site can be found in Appendix 1. These locations are considered sensitive as they may be susceptible to vibrations from blasting activities.

6 Management and Mitigation

A series of management measures have been identified in order to minimise the impacts on the known environmental, social and heritage values. Common risks and risk control measures to consider for a Blast

Management Plan from *WorkSafe Guidance Note – Blast Management Plans* have also been presented below.

6.1 Transportation of explosive materials

All vehicles transporting explosive materials shall display placards, lettering and/or numbering required. Only authorised persons will transport and handle the explosives as designated by the authority of those licensed for this purpose, vehicles transporting explosive materials shall not be left unattended at any time.

6.2 Storage of explosive materials

The storage area of all explosive materials shall be situated on the site at a location approved by the blasting engineer of the nominated blasting subcontractor. Caps or other detonating devices must not be stored with explosives.

An accurate running inventory of all explosives and blasting agents stored at the site shall be maintained – one at the storage areas and one in the main construction – office which shall be set well back from the storage area.

The designated storage site, explosive transporting vehicles, and areas where explosives are being used shall be clearly marked and will display all required warning signs. A daily tally of all explosives delivered, used and stored will be maintained at the main Project construction office.

6.3 Blasting

The extent of blasting required will depend on the areas where extreme hardness is identified, however regardless of the extent, blasting will only occur between 8am-4pm and in accordance with the procedures outlined in this document. Qualitative assessments will be undertaken both pre and post blasting to monitor the effects of blasting on sensitive receivers. This will include the engagement of suitably qualified vibration experts and zoologists to monitor impacts to structures and fauna respectively. .

6.3.1 Pre-blasting precautions

Overarching precautions that are to be considered as part of the planning conditions and relevant industry guidelines are summarised below. These must be adopted prior to blasting occurring in addition to any specific precautions for the protection of persons and adjoining property established by the authorised blasting party.

Precautions must include the following:

- An on-site task specific Blast Management Plan must be prepared by the shot firer in line with the WorkSafe Guidance Note for Blast Management Plans,
- The location of bores, sensitive sites and properties within 1km of the blasting site must be identified/verified prior to commencing blasting,
- All sensitive sites must be inspected pre-and-post blasting for existing condition with damage recorded through notes and photographs,
- The impacts of blasting on adjoining native vegetation will be monitored. Any removal or destruction of native vegetation not permitted under the permit will be managed accordingly;
- Where practicable, no blasting will occur within 1km of known Brolga breeding sites (refer to Table 3). Where blasting is proposed during the known breeding season (July-December inclusive), it is considered that these sites are classified as sensitive receptors. During this period both before and after blasting a qualitative monitoring program will be in place; nest sites will be monitored by a suitably qualified zoologist for Brolga activity to check whether any disturbance or impacts on breeding behaviour occurs to allow for different blasting schedules (i.e. outside breeding season). Monitoring results will be provided to DELWP.
- Notification in writing of the intention of blasting must be provided to the occupants of the residences which are located wholly or partially within 1km of the location of the proposed blasting at least 48 hours prior to blasting activities.

- A blasting mat will be placed over the blasting surface. The blasting mat will remain in place until all shots are fired in the blasting zone,
- Appropriate signs and barricading will be erected in the area of blasting activities,
- Special care will be taken with detonating cords and connectors to protect from the impact of falling rocks or other impeding objects,
- Vehicles equipped with radio transmitters and portable 2-way radios will not be permitted within 50m of blasting operations.

6.3.2 Handling of explosive materials

There shall be no smoking, open lights, or fire of any kind within 50m of any area where explosives are being handled. No source of ignition, except those means necessary to light fuses or fire electric detonators, shall be permitted in an area containing loaded holes.

Containers of explosive materials shall be opened only with non-sparking tools or instruments. Metal slitters may be used for opening fibreboard boxes, paper bags or plastic tubes.

After loading of a blast is completed, all excess explosive materials and detonators shall be removed to a safe location or returned at once to the storage area, observing the same rules as when being conveyed to the blasting area.

6.3.3 Drilling and loading operations

Drilling and loading operations shall not be carried on in the same area. Drilling shall be separated from loaded holes by at least the depth of the loaded hole but in no case less than 20 metres.

The loading or loaded area shall be kept free of any equipment, operations, or persons not essential to loading and no vehicle traffic shall be permitted over loaded holes. The blast site shall be guarded or barricaded and posted with danger signs to restrict unauthorised entry.

No holes shall be loaded except those to be fired in the next round of blasting; after loading all remaining explosive materials and detonators shall be immediately returned to an authorised magazine. No explosive materials or loaded holes shall be left unattended at the blast site at any time, Cartridges shall be primed only in the number required for a single round of blasting.

6.3.4 Site clearance and post blast reoccupation

Prior to the firing of a shot, all persons in the danger area shall be warned of the blast and ordered to a safe distance away from the blast. Blasts shall not be fired until the blasting engineers is certain that every person has retreated to a safe distance and no one remains in a dangerous location.

Prior to the firing of a shot, a competent person shall be posted at all access points to danger areas.

All blasting operations shall use the following safety signals:

- (1) **Warning Signal** – A one-minute series of long audible signals 5 minutes prior to blast signal;
- (2) **Blast Signal** – A series of short audible signals 1 minute prior to the shot; and
- (3) **All Clear Signal** – A prolonged audible signal following an inspection of blast area.

Following the reoccupation of site, the sensitive sites identified during pre-blasting precautions must once again be inspected to assess any signs of damage including fragments from the blast. The condition of these sensitive sites is to be recorded in writing and with photographs allowing comparison with the preconstruction inspection to be undertaken. If any signs of damage/impact are recorded restoration of the site must be agreed with the environmental representative and the project manager for damage to property.

6.4 Compliance testing

All air blast compliance testing that is performed as part of the monitoring program, must be completed and recorded generally in accordance with the following sections of Australian Standard AS218.2: Explosives – Storage and use – Part 2: Use of Explosives (2006):

- Appendix J3.1.1 'Management',
- Appendix J3.1.2 'Typical Blast monitoring guidelines',

- Appendix J3.3.1 'Measuring Equipment',
- Appendix J3.4 'Blast monitoring records'.

6.4.1 Measurement Instrumentation

Measurement instruments that are used for air blast compliance testing will comply with the following requirements:

- The Sound Level Meter shall be a type 1 precision instrument,
- The Sound Level Meter must be capable of measuring the absolute Peak Linear sound pressure level,
- The Sound Level Meter must have sufficient memory capacity available during each measurement and be configured to record waveforms long enough for the blast design and distance,
- After recording the blast, the instrumentation must have the capability of saving the measurement, the date must be secured and available for any subsequent analysis,
- The microphone shall be protected from extraneous wind sound by using a manufacturer's purpose designed windshield,
- The frequency range of the measurement instrumentation must be at least 1Hz to 250Hz (-3dB roll off) with tolerance of +/- 1dB over this frequency range.

6.4.2 Methodology-

The general method for capturing and recording noise level measurements during the blasting compliance monitoring should follow the structure below;

- Noise level measurements are to be taken at the nearest noise sensitive receiver residential building locations,
- The noise level metre should be calibrated in accordance with manufacturers recommendations,
- Compliance sound pressure level testing shall only take place where wind speeds are known to be in the range of 0m/s to 5m/s,
- The microphone shall be mounted at a height of not less than one metre from the ground and be fitted with a manufacturers purpose designed windshield wind shield,
- The microphone windshield must be fitted in accordance with the manufacturer's recommendations,
- The microphone shall be mounted on a tripod or similar stable stand,
- The microphone must be located at least 5 metres away from any structures that may produce sound reflections,
- The microphone shall be oriented in a direction of maximum sensitivity to the incident sound,

After recording the blast, the instrumentation must have the capability of saving the measurement, the data must be secured and available for any subsequent analysis.

6.5 Blast Monitoring records

As a minimum, blast monitoring records shall be included in the blast management plan and should incorporate the following:

- The size of the blast in terms of number of blast holes and the quantity of explosives in each blast hole,
- The method of initiation and the timing sequence to be used in the blast,
- The date and time of the blast, location of the measurement transducer,
- Instrument trigger levels,

- Measurement equipment and operator details including location of the blast in relation to construction site limitations,
- The location of any structures and/or persons who may be affected by the blast,
- The measured Linear Peak air blast values,
- The weather conditions especially:
 - Wind speed,
 - Wind direction,
 - Cloud cover,
 - Any other notable weather conditions such as rain
- Any subjective information from the shot-firer and any persons who may be affected by the blast.

6.6 Response protocol for confirmed breaches

A response protocol will be instigated on confirmed breaches of the limitations defined within the Construction Noise Management Plan.

The response will consider but not be limited to the following:

- Optimizing blast design by altering drilling patterns, and adjusting the maximum instantaneous charge (effective charge mass per delay),
- Using a combination of appropriate delays,
- Using survey methods as appropriate to ensure that burden is adequate,
- Keeping face heights to a minimum,
- Ensuring stemming type and length is adequate,
- Eliminating exposed detonating cord. Investigate alternative initiation methods,
- Eliminating secondary blasting,
- Making extra effort to eliminate the need for two shots (e.g. better control of drill patterns)
- Considering postponing the blast by not loading if the weather forecast is unfavourable,
- Allowing for the effects of temperature inversion and wind speed and direction on the propagation of air blast to surrounding areas,
- Varying the direction of initiation,
- Orienting faces where possible so that they do not face directly towards residences,
- Exercising strict control over burden, spacing and orientation of all blast holes,
- Taking particular care where the face is already broken or where it is strongly jointed, sheared or faulted,
- Considering deck loading where appropriate to avoid broken ground or cavities in the face (e.g. from back break),
- Keeping in contact with the compliant and report back on a timely basis (initially within one week) as to what course of action is being to rectify the cause.

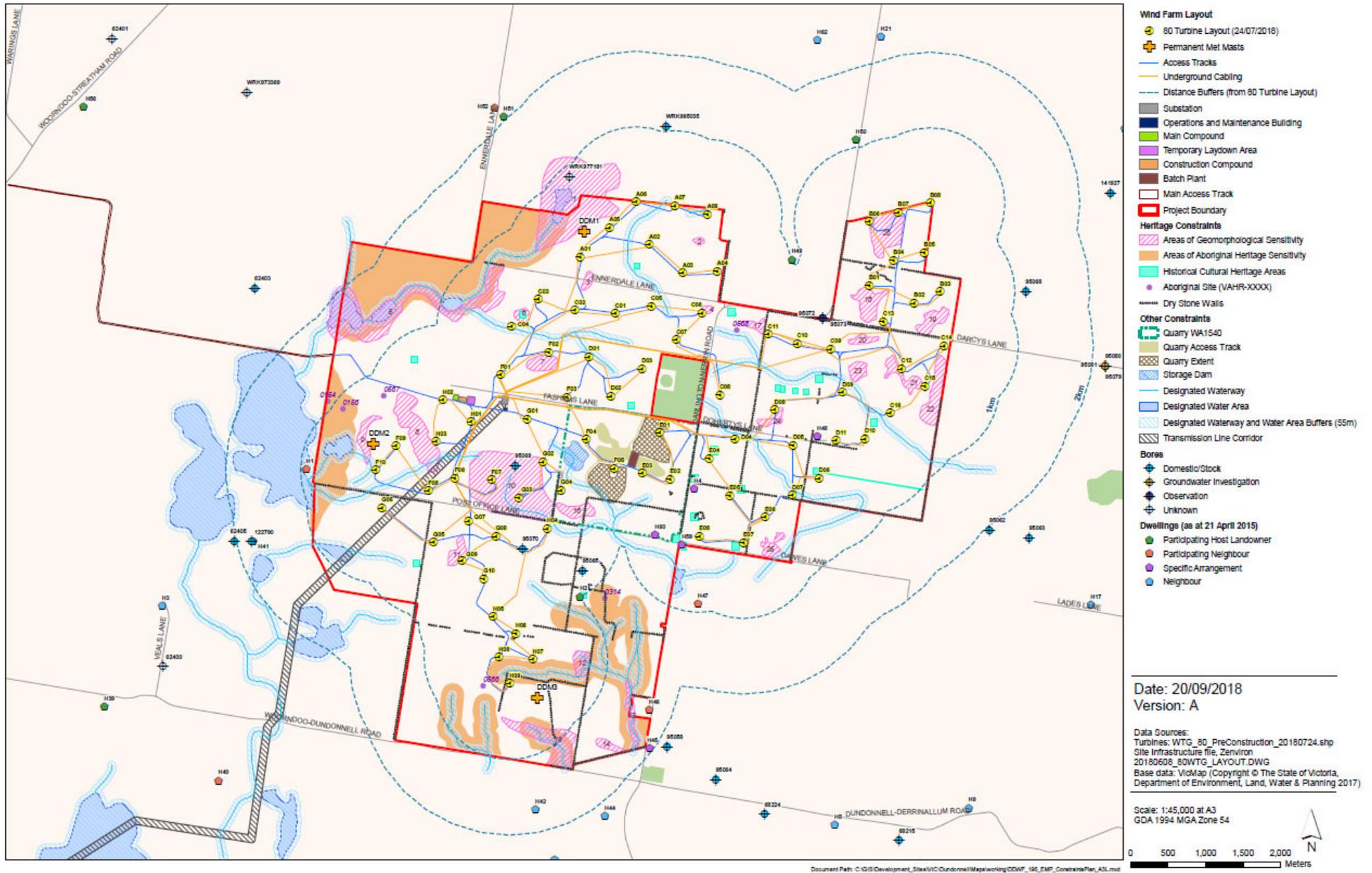
7 Glossary and abbreviations

BMP	Blasting Management Plan
DDWF	Dundonnell Wind Farm (excluding transmission line, quarry and off-site substation).
EMP	Environmental Management Plan
Planning Permit	Planning Permit No. 2015/23858

Appendix 1 – Dundonnell Wind Farm Constraints Plan

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Dundonnell Wind Farm

Appendix M - Figure 2: Constraints Plan - General

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Appendix H – Vegetation Management Plan

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**DUNDONNELL WIND FARM
VEGETATION MANAGEMENT PLAN**

**Dundonnell Wind Farm Pty Ltd
Zenviron Pty Ltd**



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Revision History

Revision	Description	Date	Prepared By	Approved By
13.0	Initial draft provided to Tilt Renewables and Zenviron for comment	8/5/2018	V Fyfe	I Kulik
13.1	Revised draft incorporating comments from Tilt Renewables and Zenviron	04/06/2018	E Ebsworth	I Kulik
13.2	Revised draft incorporating comments from Tilt Renewables and Zenviron	21/06/2018	E Ebsworth	I Kulik
13.3 & 13.4	Revised draft incorporating comments from DELWP	25/09/2018	I. Kulik	-
13.5	Revised draft incorporating comments from DELWP	11/10/2018	E. Dagher	M. Glass
13.6	Revised draft incorporating comments from DELWP	27/11/2018	E. Dagher	I Kulik

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1. INTRODUCTION

This Vegetation Management Plan (VMP) has been prepared by Brett Lane & Associates (BL&A) for Zenviron Pty Ltd, on behalf of Dundonnell Wind Farm Pty Ltd, in relation to the Dundonnell Wind Farm (DDWF).

The Dundonnell Wind Farm was approved by the Minister for Planning in July 2016 under Planning Permit 2015/23858 (the Planning Permit), issued 23 October 2016.

This VMP has been prepared in accordance with of Conditions 46 and 62 of the Planning Permit and is generally in accordance with Chapter 25 of the Dundonnell Wind Farm EES (June 2015). The objective of this plan is to provide management and mitigation measures to avoid and minimise potential impacts on areas of native vegetation to be retained and fauna habitat.

Table 1 details which sections of the Vegetation Management Plan comply with each of the specific requirements outlined in Conditions 46 and 62 of approval for the project. In addition, **Section 2** includes a description of the project, **Section 3** details the management actions to be implemented and **Section 4** details the timeframe and responsibilities for implementation of the Vegetation Management Plan.

This Plan was prepared by a team from BL&A, comprising Verity Fyfe (Ecologist) and Inga Kulik (Senior Ecologist and Project Manager).

Table 1: Compliance with Condition 46

Condition	Requirement	Plan Section(s)
46	The environmental management plan must include a vegetation management plan to be prepared in consultation with DELWP – Environment Portfolio and approved by the responsible authority. The vegetation management plan must include:	-
a.	Identification of the siting and extent of native vegetation which is authorised by this permit to be removed.	Section 3
b.	Procedures for the rehabilitation of construction zones with appropriate pastures species or native grasses (if in areas of native vegetation).	Section 4.3
c.	Procedures for ensuring that native vegetation to be retained near wind energy facility infrastructure, including access tracks, will not be adversely affected by construction of the wind energy facility.	Section 4.2
d.	Protocols to prevent inadvertent loss or disturbance of habitat for the Striped Legless Lizard, the Fat-tailed Dunnart, the Growling Grass Frog, the Corangamite Water Skink and the Golden Sun Moth.	Section 4.4

Condition	Requirement	Plan Section(s)
62	<p>Before development starts, a plan to the satisfaction of the responsible authority identifying all native vegetation to be retained, and describing the measures to be used to protect the identified vegetation during construction, must be prepared in consultation with DELWP - Environment Portfolio and submitted to and approved by the responsible authority. When approved, the plan will be endorsed and will form part of this permit. All works constructed or carried out must be in accordance with the endorsed plan.</p>	<p>Section 3.2 and Section 4.2</p>

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2. PROJECT DESCRIPTION

2.1. Wind Farm site

The DDWF is located in Western Victoria, 23 kilometres north-east of Mortlake and 21 kilometres west of Derrinallum (Figure 1 of EMP). The site comprises an approximate area of 4,200 hectares, with a 220-hectare project footprint across 11 farming properties. The site is within the Moyne Shire.

The wind farm site lies between private landholdings to the north, east and west, and the Woorndoo-Dundonnell Road to the south. The wind farm site includes the roadsides of Ennerdale Lane, Fashams Lane, Dohertys Lane, Post Office Lane and Dawes Lane.

Existing infrastructure at the site and on the surrounding land is predominately agricultural in nature and includes isolated dwellings, sheds, access tracks and fencing.

The majority of the wind farm site is unimproved pasture used for livestock grazing, with some areas of cleared land for improved pasture. Land use surrounding the wind farm site includes grazing and cropping.

The wind farm site comprises a series of volcanic flows which have formed a mosaic of basalt ridges (barriers). The majority of the wind farm site is dominated by pasture grass and agricultural and environmental weeds. Native vegetation is limited to small scattered patches of shallow grassy wetland, escarpment shrubland, plains grassland and scattered River Red Gum trees.

The land to the west of the wind farm has been subject to more intense agricultural activities. Here also, improved pasture and typical introduced agricultural and environmental weeds, as well as extensive cropping, dominate the landscape.

2.2. Project components

The Project will consist of the following components, as shown in Figure 1 of the EMP and detailed in Section 2 of the Environmental Management Plan for this site:

- Eighty wind turbines, including base construction area and adjacent construction pads;
- Turbine access tracks within the wind farm site including a network of underground 33 kV distribution cables that connect to the onsite substation;
- The major site entrance access track, which runs from Woorndoo-Streatham Road to the wind farm site;
- The equipment lay-down areas and site office in the western part of the site;
- Temporary concrete batching plant;
- Two proposed on-site quarry sites; and
- On-site electrical substation.

The wind farm will be connected to the National Electricity Market via a 38km 220kV transmission line, and offsite substation, to the Mortlake Power Substation (MOPS). This infrastructure has been approved under a separate Moyne Planning

Permit (PL15/075) and will be subject to a separate Environmental Management Plan.

The Mt Fyans Wildlife Reserve, located in the centre of the wind farm site, is excluded from any wind farm related development and will not support any wind farm infrastructure.

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3. VEGETATION WITHIN DDWF

3.1. Native vegetation to be removed

The DDWF has been the subject of a detailed flora and fauna assessment which is outlined in the report *Dundonnell Wind Farm: Flora and Fauna Assessment* prepared by BL&A (2015). The report identified patches of native vegetation across the wind farm site, focussing on a defined assessment area in the proximity of access roads and impact areas for construction.

The location and extent of native vegetation to be removed is shown on the endorsed Native Vegetation Removal Plans, under Condition 1 of Planning Permit No. 2015/23858), as well as EMP Appendix M Figure 6 Native Vegetation Removal.

This plan must be read in conjunction with the endorsed Native Vegetation Removal Plans.

(Note. At the time of the preparation of this document, the plans show a total of 0.817 hectares of remnant native vegetation, which is less as prescribed under Planning Permit No. 2015/23858) issued by the Minister for planning, which allows for up to 0.928 hectares.)

3.2. Native vegetation to be retained

Native vegetation to be retained at the DDWF comprises approximately 135 hectares of native patch vegetation in the form of the following Ecological Vegetation Classes (EVCs):

- Plains Grassy Woodland (EVC 55)
- Plains Grassy Wetland (EVC 125)
- Plains Grassland (EVC 132)
- Plains Sedgy Wetland (EVC 647)
- Stony Knoll Shrubland (EVC 649)
- Aquatic Herbland (EVC 653)

In addition, native vegetation to be retained at the DDWF supports the following two critically endangered ecological communities listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act):

- *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (SHWTLP); and*
- *Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP).*

The project footprint, native vegetation to be removed and native vegetation to be retained is presented in the endorsed Native Vegetation Removal Plan. The project footprint provides a defined area that contractors will be confined to, so as to eliminate unintentional impacts on retained native vegetation.

4. MANAGEMENT AND MITIGATION MEASURES

Environmental constraints are factored into the detailed design of all project infrastructure including, but not limited to, hardstands, access tracks, turbine footings, and compound/site facilities. All avoidance areas (as shown in the endorsed plans) are overlaid into the engineering design software and avoided where required, or areas calculated to ensure native vegetation clearing limits are not exceeded. Environmental constraints will be clearly marked on relevant engineering drawings that are issued for construction. Issued for construction drawings are controlled in accordance with the Contractors quality management systems and are the primary medium for setting out and ensuring construction is in accordance with the design and in turn the constraints

Management and mitigation measures to protect native vegetation and fauna habitat to be retained are summarised below and detailed in the following sections.

- Restriction of unauthorised access.
- Provision of signage to deter prohibited activities.
- Limiting of all machinery and vehicular traffic to defined impact areas (including restricting access/damage to impact areas during wet boggy weather).
- Temporary fencing and signage of retained native vegetation within 30 metres of defined impact areas.
- Temporary perimeter flagging and signage of retained native vegetation beyond 30 metres and within 50 metres of defined impact areas.
- Rehabilitate construction zones via direct seeding of appropriate pasture grasses or native grasses (if in areas of native vegetation).
- Induction of all contractors accessing the broader property into the prescriptions of this plan before accessing the property.
- Manage all rubbish and construction waste during the construction phase of the project.
- Manage the threat of weed invasion throughout the construction and operational phases of the project.

4.1. Native vegetation to be retained

Remnant native vegetation at the wind farm site is limited to numerous relatively small scattered patches of shallow Plains Grassy Wetland (EVC 125), Aquatic Herbland (EVC 653) and Plains Sedgy Wetland (EVC 647), numerous areas of Stony Knoll Shrubland (EVC 649) on the tallest of barriers as well as Plains Grassland (EVC 132) and Plains Grassy Woodland (EVC 55) as small patches within the site and along the road reserves.

The major site access track is situated on flatter land to the west of the wind farm, which has been subject to more intense agricultural activities. Improved pasture and typical introduced agricultural and environmental weeds as well as extensive cropping, dominate the adjacent landscape. Remnant vegetation in this component was limited to areas of Plains Grassland (EVC 132) in some areas of the track and a shallow Plains Grassy Wetland (EVC 125) adjacent to the track.

The Mount Fyans Nature Reserve is situated in the centre part of the wind farm site and was excluded from any development plans.

All native vegetation of the site is mapped in Appendix M Figure 3 of the EMP.

4.2. Procedures to protect native vegetation to be retained

Pre-construction and during construction

- All vehicles are to remain within the defined ‘impact areas’ (including access tracks).
- All wind farm infrastructure, including access tracks, will be located in approved locations only.
- Prior to construction, temporary fencing will be erected around patches of native vegetation that occur within 30m of the defined ‘impact area’ of the project and clearly signed for protection.
- Prior to construction, patches of native vegetation that occur beyond 30m and within 50m of the defined ‘impact area’ of the project will be flagged and clearly signed for protection.
- Fencing and flagging will occur at 2 metres from the perimeter of each patch and appropriately signed “Significant Vegetation – No Go Zone”.
- No turning points are to be created in the “No Go Zones”. Turning points will take advantage of existing paddock access points, driveways or roads.
- No parking areas are to be created in the “No Go Zones”. Parking areas will be established on adjacent private land or side roads.
- Regular monitoring of rubbish/construction waste adjacent to construction works areas must be carried out and any rubbish/construction waste found occurring within or adjacent to areas of native vegetation must be removed immediately.
- All contractors to be trained in issues relating to weed and pathogen hygiene at a compulsory induction prior to commencing works.
- A program of spot spraying of any noxious weeds will be implemented throughout construction.
- Adhere to the Biosecurity Management Plan.

Operational phase

- A program of spot spraying of any noxious weeds will be implemented throughout the operational phases around turbines and access tracks.
- All site personnel and contractors will remain on established access tracks at all times and not venture into areas of native vegetation. Site inductions undertaken by the site manager will ensure this.

4.3. Procedures for the rehabilitation of construction zones with appropriate pastures species or native grasses (if in areas of native vegetation)

The rehabilitation of construction zones involves the restoration of vegetation cover (native or introduced, as determined by the vegetation to be removed and that in surrounding areas) within construction zones.

During construction where vegetation is cleared and/or disturbed these areas are susceptible to negative impacts such as soil erosion, soil loss and invasion by weeds and pathogens. Thus, the rehabilitation of construction zones is important both for agricultural and ecological productivity.

4.3.1. Restore vegetation cover

The majority of construction zones occur in areas of pasture, while a small portion occur within areas of native vegetation in the form of Plains Grassland (EVC 132) or Stony Knoll Shrubland (EVC 649). Restored vegetation will replicate adjacent vegetation, as adjacent vegetation is likely to be representative of what has been removed.

Vegetation restoration will involve the direct seeding of indigenous grasses in areas of Plains Grassland (wallaby grasses and spear grasses) and Stony Knoll Shrubland (Kangaroo Grass, wallaby grasses, spear grasses) as well as Sterile Rye-grass in areas of pasture.

These grasses are known to establish quickly and provide cover in a relatively short space of time. Over time surrounding grassy vegetation will recruit into the rehabilitation areas, further enhancing vegetation cover.

Weed control will be conducted prior to and post seeding to facilitate the natural growth and recruitment of grassy vegetation.

The following target is to be achieved in regards to vegetation restoration:

- Establish at least 50% graminoid foliage cover across the rehabilitation areas (excluding noxious weeds) within six months of disturbance.

No significant ground disturbance is to occur (e.g. deep ripping). Erosion control will be applied in areas near native vegetation during construction to minimise soil loss. No rock, fill, soil, mulch, fabrics or other materials may be imported or used to implement this rehabilitation. The environmental representative of the construction company will be responsible for the rehabilitation works in consultation with suitably qualified ecologist.

Preparation

Weed control will be conducted for at least one month prior to direct seeding in order to reduce competition from weeds and facilitate the growth and recruitment of grassy vegetation in the rehabilitation areas.

Personnel using herbicide onsite must hold a current Agricultural Chemical User Permit. Hand weeding or the use of selective herbicide may be required in areas containing native vegetation to avoid off-target damage.

Direct seeding

Seed will be sourced from a reputable seed bank and be fresh, clean, treated and viable.

Direct seeding is best carried out in Spring or Autumn. Ideally seeding shall occur immediately after a rainfall event and during a period of little to no wind. If this is not feasible the rehabilitation area shall be soaked prior to seeding.

Sterile Rye-grass *Lolium perenne* is an introduced grass species. It has been selected for restoration for areas of pasture or non-native vegetation on the basis that it is non-noxious, effective at stabilising soil, and fast growing so as to provide vegetation cover within a relatively short period of time.

Direct seeding can either be spread by hand (manually) or using direct seeding machines (mechanically). Rocks may be present underneath levelled earth in the rehabilitation areas. Therefore, it is recommended that direct seeding is done manually.

Direct seeding will occur within one month of disturbance. Approximately one kilogram of seed per hectare will be required to meet the plant cover objectives of the rehabilitation areas.

4.3.2. Maintenance

Occasional watering, dependent on rainfall and climate, may be required to aid plant establishment (particularly over summer).

Ongoing weed control is a key factor in maintaining vegetation cover in rehabilitation areas given the susceptibility of these areas to weed invasion.

4.4. Protocols to prevent inadvertent loss or disturbance of habitat for the Striped Legless Lizard, the Fat-tailed Dunnart, the Growling Grass Frog, the Corangamite Water Skink and the Golden Sun Moth.

4.4.1. Fauna habitat to be retained

Corangamite Water Skink

The vast majority of the wind farm site does not support suitable habitat for Corangamite Water Skink, though a small portion of potential habitat was identified in the south-eastern and north-western parts of the wind farm site. This habitat, which is considered to be of low quality, will not be impacted by the wind farm construction and operation since it lies within a turbine exclusion buffer to minimise impacts on Brolga. To further reduce potential impacts, a turbine buffer of 55 metres has been applied to wetlands and drainage lines which are considered to provide habitat for this species (see Figure 3 of EMP).

Golden Sun Moth

Potential habitat for the Golden Sun Moth has been identified in one paddock at the wind farm site (see Figure 3 of EMP), however this area will be avoided and no habitat loss for this species is anticipated from the construction or operation of the wind farm. As a result, there are no protocols in place for the protection of this habitat.

Growling Grass Frog

Potential habitat for Growling Grass Frog has been identified within the wind farm site in areas supporting wetlands and drainage lines (see Figure 3 of EMP). This habitat will not be impacted by the wind farm construction and operation since it lies within a turbine exclusion buffer to minimise impacts on Brolga. To further reduce potential impacts, a turbine buffer of 55 metres has been applied to

wetlands and drainage lines which are considered to provide habitat for this species.

Striped Legless Lizard

Potential habitat for the Striped Legless Lizard is associated with areas of native patch vegetation in the form of Plains Grassland (EVC 132) and Stony Knoll Shrubland (EVC 649) (see Figure 3 of EMP). The procedures put forward to protect native vegetation to be retained (see Section 4.2) will serve to protect habitat for this species. Refer to the Fauna Management Plan for further information regarding the management and mitigation of impacts to this species at the wind farm site.

Fat-tailed Dunnart

Fat-tailed Dunnart was recorded twice in Stony Knoll Shrubland (EVC 649) and rocky outcrops during targeted surveys at the wind farm site and is vulnerable to impacts from the wind farm construction and operation. Refer to the Fauna Management Plan for further information regarding the management and mitigation of impacts to this species at the wind farm site.

4.4.2. Significant fauna habitat protection protocols

The following protocols will be communicated to the construction and other site personnel by the environmental representative through a site induction and implemented to prevent inadvertent loss or disturbance of habitat for the Striped Legless Lizard, the Fat-tailed Dunnart, the Growling Grass Frog, the Corangamite Water Skink and the Golden Sun Moth (collectively termed ‘significant fauna’ for the purposes of this section).

- Adhere to the Fauna Management Plan.
- All vehicles are to remain within the defined ‘impact areas’.
- No turning points are to be created in the “No Go” zones. Turning points will take advantage of existing paddock access points, driveways or roads.
- No parking areas are to be created in the “No Go” zones. Parking areas will be established on adjacent private land or side roads.
- Regular monitoring of rubbish/construction waste adjacent to construction works areas must be carried out and any rubbish/construction waste found occurring within or adjacent to areas of fauna habitat must be removed immediately.
- All contractors to be trained by the environmental representative in issues relating to weed and pathogen hygiene at a compulsory induction prior to commencing works.
- A program of spot spraying of any noxious weeds will be implemented throughout construction and operational phases.
- Adhere to the Biosecurity Management Plan.

4.5. Induction

A site induction of all construction and site personnel will be undertaken by the environmental representative of the construction company to ensure the protocols defined in this plan are known and implemented.

4.6. Monitor and Review

Monitoring will be undertaken daily during construction by the environmental representative or site manager for:

- Integrity of native vegetation protection fences and flags;
- Adherence to no-go zones by construction personnel;
- Outbreaks of noxious weeds;
- No impacts to occur in native vegetation and fauna habitat to be retained; and
- Rubbish/construction waste near works areas and removal of this within areas of native vegetation and fauna habitat to be retained.

The monitoring activity will be detailed in a site log and reviewed weekly by the environmental representative of the site. The following information is to be recorded for all relevant observations within the site:

- Date;
- The type of observation (Incidental observation/ survey/ control action);
- A brief description of the observation/ activity (e.g. the location, extent and cover of the noxious weed infestation or rubbish);
- The person reporting;
- Whether follow-up mitigation measures are required; and
- The method of any follow-up mitigation measures and date completed (where required).

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5. IMPLEMENTATION OF THE VEGETATION MANAGEMENT PLAN

Table 2: Management actions and compliance indicators

Sensitive Ecological Value	Potential Impacts	Management Measures	Responsibility	Compliance Indicator/s	Monitoring Frequency
Native vegetation patches	Damage/disturbance due to vehicles and machinery	<ul style="list-style-type: none"> ▪ All vehicles to remain within the defined ‘impact areas’. ▪ Areas of retained native vegetation (patches) within the ‘impact areas’ or within 30m of the impact areas will be temporarily fenced at two metres from the perimeter of each patch and appropriately signed “Significant Vegetation Zone - No Go Zone”. ▪ Areas of retained native vegetation (patches) beyond 30m and within 50m of the ‘impact areas’ will be marked with flags at two metres from the perimeter of each patch and appropriately signed “Significant Vegetation Zone - No Go Zone”. ▪ No turning points are to be created in the “No Go” zones. Turning points will take advantage of existing paddock access points, driveways or roads. ▪ No parking areas are to be created in the “No Go” zones. Parking areas will be established on adjacent private land or side roads. 	Environmental representative of construction company and construction personnel	No damage to vegetation within fenced protected areas	Daily during construction phase
Fauna habitat	Damage/disturbance due to vehicles and machinery	<ul style="list-style-type: none"> ▪ All vehicles to remain within the defined ‘impact areas’. ▪ No turning points are to be created in the “No Go” zones. Turning points will take advantage of existing paddock access points, driveways or roads. 	Environmental representative of construction company and construction personnel	No impact on fauna habitat	Daily during construction phase

Sensitive Ecological Value	Potential Impacts	Management Measures	Responsibility	Compliance Indicator/s	Monitoring Frequency
		<ul style="list-style-type: none"> ▪ No parking areas are to be created in the “No Go” zones. Parking areas will be established on adjacent private land or side roads. ▪ Refer to the Fauna Management Plan for further fauna management measures. 			
Native vegetation patches	Damage due to native vegetation patches surrounding permitted native vegetation removal	<ul style="list-style-type: none"> ▪ Areas of vegetation to be removed will be clearly marked with spray paint and surrounding areas to be retained within 50m of the impact areas will be clearly fenced/flagged and signed for protection (as described in Task 1). ▪ Only those areas permitted under Permit no. 2015/23858 are to be removed. ▪ Removed vegetation to either be immediately extracted by vehicle or set aside after removal (within the impact zone) for it to be subsequently burned. 	Suitably qualified ecologist	No removal of additional vegetation other than that approved under permit	Once off
Native vegetation patches	Weed and pathogen invasion	<ul style="list-style-type: none"> ▪ All contractors to be trained in issues relating to weed and pathogen hygiene at a compulsory induction prior to commencing works. ▪ A program of spot spraying of any noxious weeds will be implemented throughout construction and operational phases. ▪ Refer to the Biosecurity Management Plan for further weed and pathogen management measures. 	Environmental representative of construction company	Implementation of weed and pathogen hygiene procedures	Daily
Native vegetation patches and fauna habitat	Damage/disturbance due to the dumping of rubbish and construction wastes	<ul style="list-style-type: none"> ▪ Integrity of the flagging/fencing around the perimeter of native vegetation patches (occurring within 50m of any impact areas) to be maintained throughout the construction phase of the project. 	Environmental representative of construction company	No rubbish/construction waste found in “No Go” zones	Daily during construction phase

Sensitive Ecological Value	Potential Impacts	Management Measures	Responsibility	Compliance Indicator/s	Monitoring Frequency
		<ul style="list-style-type: none"> ▪ Regular monitoring of rubbish/construction waste adjacent to works areas. ▪ Any rubbish/construction waste found occurring within areas of native vegetation and fauna habitat is to be removed immediately. 			

6. REFERENCES

Brett Lane and Associates Pty Ltd (BL&A) 2015, *Dundonnell Wind Farm: Flora and Fauna Assessment, Report No. 9184 (5.16)*, Report prepared for Trustpower Pty Ltd by Brett Lane and Associates Pty Ltd, Hawthorn East, Victoria.

Brett Lane and Associates Pty Ltd (BL&A) 2016, *Dundonnell Wind Farm Transmission Line and Access Track: Revision of vegetation impacts, Report No. 9184 (29.0)*, Report prepared for Trustpower Pty Ltd by Brett Lane and Associates Pty Ltd, Hawthorn East, Victoria.

Brett Lane and Associates Pty Ltd (BL&A) 2018, *Dundonnell Wind Farm Review of Optimised Wind Farm Layout, Report No. 17185.3*, Report prepared for Tilt Renewables Australia Pty Ltd by Brett Lane and Associates Pty Ltd, Hawthorn East, Victoria.

Trustpower 2015, *Dundonnell Wind Farm EES, Chapter 25 – Environmental Management Framework*, Melbourne, June 2015.

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Appendix I – Biosecurity Management Plan

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DUNDONNELL WIND FARM
BIOSECURITY MANAGEMENT PLAN

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Revision History

Revision	Description	Date	Prepared By	Approved By
12.0	Initial draft provided to Tilt Renewables and Zenviron for comment	8/5/2018	E Ebsworth	I Kulik
12.1	Revised draft incorporating comments from Tilt Renewables and Zenviron	4/6/2018	E Ebsworth	I Kulik
12.1	Revised draft incorporating comments from Zenviron regarding decontamination bays	15/6/2018	I Kulik	-
12.4	Revised draft incorporating comments from Zenviron in response to comments from Agriculture Victoria	16/8/2018	E Ebsworth	-
12.5	Revised draft in response to comments from DELWP	24/09/2018	E Ebsworth	I. Kulik

1. INTRODUCTION

This Biosecurity Management Plan (BMP) has been prepared by Brett Lane & Associates (BL&A) for Zenviron Pty Ltd, on behalf of Dundonnell Wind Farm Pty Ltd, in relation to the Dundonnell Wind Farm (DDWF).

The Dundonnell Wind Farm was approved by the Minister for Planning in July 2016 under Planning Permit 2015/23858 (the Planning Permit), issued 23 October 2016.

This BMP has been prepared in accordance with of Condition 47 of the Planning Permit and is generally in accordance with Chapter 25 of the Dundonnell Wind Farm EES (June 2015). The objective of this plan is to identify, prevent and manage the risk of diseases, weeds and pest animals entering, establishing or spreading within or beyond the DDWF.

The necessary inclusions of the plan, in accordance with Condition 47, as well as the section of this plan in which each is addressed, is shown in Table 1. In addition, **Section 2** includes a description of the project, **Section 3** identifies the primary biosecurity risks for the DDWF, **Section 4** includes relevant government or industry standards and procedures for identification, prevention and management of biosecurity risks, **Section 5** comprises procedures to prevent biosecurity risk, **Section 6** contains the protocol for identification, intervention and management of biosecurity risks and **Section 7** details the timeframe and responsibilities for implementation of the Biosecurity Management Plan.

This Plan was prepared by a team from BL&A, comprising Elinor Ebsworth (Senior Ecologist) and Inga Kulik (Senior Ecologist and Project Manager).

Table 1: How this BMP addresses Condition 47

Condition	Requirement	Plan Section(s)
47	A biosecurity management plan be prepared in consultation with Department of Economic Development, Jobs, Transport and Resources (DEDJTR) and to the satisfaction of the responsible authority. The biosecurity management plan must include:	-
a.	Procedures to prevent biosecurity risks, which may include (but not limited to): i. The cleaning of all plant and equipment before transport onto and off the site; and ii. The use of material/products on site which are free of invasive plants and animals;	Section 5 comprises procedures to prevent biosecurity risk.
b.	A protocol for effective identification of biosecurity risks, early intervention to manage biosecurity risks, ongoing monitoring of biosecurity risks, trace-backs, and integrated control measures when entry, establishment and spread of specific risk targets is identified;	Section 6 contains the protocol for identification, intervention and management of biosecurity risks.

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Condition	Requirement	Plan Section(s)
c.	<p>A requirement to comply with approved government or industry standards and procedures for identification, prevention and management of biosecurity risks that apply from time to time, which include (but are not limited to):</p> <ul style="list-style-type: none"> i. The DEDJTR’s invasive Plant and Animal Management Policy Framework; ii. The DEDJTR’s Biosecurity Guidelines for Movement of Equipment Contractors between Farms; and iii. The DEDJTRs recommended standards and practices for managing viticulture biosecurity and plant biosecurity risks. 	<p>Section 4 includes relevant government or industry standards and procedures for identification, prevention and management of biosecurity risks. The principles of these standards and procedures are also applied throughout this plan.</p>

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2. PROJECT DESCRIPTION

2.1. Wind farm site

The DDWF is located in Western Victoria, 23 kilometres north-east of Mortlake and 21 kilometres west of Derrinallum (see EMP Figure 1). The site comprises an approximate area of 4,200 hectares, with a 220-hectare project footprint across 11 farming properties. The site is within the Moyne Shire.

The wind farm site lies between private landholdings to the north, east and west, and the Woorndoo-Dundonnell Road to the south. The wind farm site includes the roadsides of Ennerdale Lane, Fashams Lane, Dohertys Lane, Post Office Lane and Dawes Lane.

Existing infrastructure at the site and on the surrounding land is predominately agricultural in nature and includes isolated dwellings, sheds, access tracks and fencing.

The majority of the wind farm site is unimproved pasture used for livestock grazing, with some areas of cleared land for improved pasture. Land use surrounding the wind farm site includes grazing and cropping.

The wind farm site comprises a series of volcanic flows which have formed a mosaic of basalt ridges (barriers). The majority of the wind farm site is dominated by pasture grass and agricultural and environmental weeds. Native vegetation is limited to small scattered patches of shallow grassy wetland, escarpment shrubland, plains grassland and scattered River Red Gum trees.

The land to the west of the wind farm has been subject to more intense agricultural activities. Here also, improved pasture and typical introduced agricultural and environmental weeds, as well as extensive cropping, dominate the landscape.

2.2. Project components

The Project will consist of the following components, as detailed in Section 2 of the Environmental Management Plan for this site and shown in the EMP Figure 2:

- Eighty wind turbines, including base construction area and adjacent construction pads;
- Turbine access tracks within the wind farm site including a network of underground 33 kV distribution cables that connect to the onsite substation;
- The major site entrance access track, which runs from Woorndoo-Streatham Road to the wind farm site;
- The equipment lay-down areas and site office in the western part of the site;
- Temporary concrete batching plant;
- Two proposed on-site quarry sites; and
- On-site electrical substation.

The wind farm will be connected to the National Electricity Market via a 38km 220kV transmission line, and offsite substation, to the Mortlake Power Substation (MOPS). This infrastructure has been approved under a separate Moyne Planning Permit (PL15/075) and will be subject to a separate Environmental Management Plan.

The Mt Fyans Wildlife Reserve, located in the centre of the wind farm site, is excluded from any wind farm related development and will not support any wind farm infrastructure.

3. IDENTIFICATION OF BIOSECURITY RISKS

Given the current primary land use of the wind farm site as pasture for livestock grazing, with small areas of remnant native vegetation, the principal biosecurity risks are summarised in Table 2. This list is by no means exhaustive, and while this plan aims to manage these known biosecurity risks, the procedures and protocols contained within are applicable to unforeseen or new biosecurity risks if and when they arise. The known weeds, pest animals and pathogen risks for DDWF are detailed below.

3.1. Weeds

Under the *Catchment and Land Protection Act 1994* (CaLP Act) certain plants are declared as noxious weeds in Victoria. These plants cause environmental or economic harm or have the potential to cause such harm.

The CaLP Act requires that land owners (or a third party to whom responsibilities have been legally transferred) must prevent the growth and spread of regionally controlled weeds.

The *Dundonnell Wind Farm – Flora and Fauna report* (BL&A 2015) recorded the following high-threat weed species, listed under the CaLP Act, within the wind farm site:

- Gorse
- Horehound
- Paterson's Curse
- Sweet Briar

In accordance with the *Catchment and Land Protection Act 1994*, these noxious weeds must be controlled.

Precision control methods that minimise off-target kills (e.g. spot spraying) will be used in environmentally sensitive areas (e.g. within or near native vegetation, waterways, etc), in combination with other treatment measures to ensure maximum effectiveness. This includes physical clearing of treated and dead woody weeds such as Gorse, which may provide harbour for pest animal such as rabbits and foxes.

Further information on invasive plant classifications and the CaLP Act is available at <http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds/weeds/invasive-plant-classifications>.

3.2. Pest animals

'Established invasive animals' are, by definition of the CaLP Act, widespread and established. Under the CaLP Act, all landowners (or a third party to whom responsibilities have been legally transferred) must prevent the spread of, and as far as possible eradicate, established pest animals.

The *Dundonnell Wind Farm – Flora and Fauna report* (BL&A 2015) identified that the following established invasive animals, listed under the CaLP Act, occurred or were likely to occur within the wind farm site:

- European Hare
- European Rabbit
- Red Fox

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Strategic, coordinated control methods that minimise off-target impacts will be employed for pest animal control (see Section 5.6).

3.3. Pathogens

The wind farm site had not been surveyed for pathogens; however, given the land use of the site present and potential pathogens are likely to include livestock diseases, pasture diseases and crop diseases in surrounding areas. Throughout the pre-construction and construction phases of the project, the construction Contractor will liaise with property owners to ensure potential pathogens are identified and managed appropriately.

Information on these categories is available from Agriculture Victoria as follows:

- Livestock diseases:
<http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds/animal-diseases>
- Pasture diseases:
<http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds/plant-diseases/pastures-diseases>
- Crop diseases:
<http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds/plant-diseases/grains-pulses-and-cereals>

Table 2: Identification of principal biosecurity risks

Threats	Pasture	Livestock	Native vegetation	Native fauna
Weed invasion	Reduced pasture quality from increased competition.	Physical injury (e.g. from thorns or sharp seeds). Poisoning.	Increased competition.	Reduced availability of habitat. Increased competition from pest animals where weed species provide harbour to these.
Pest animal invasion	Damage to soil structure/ composition resulting in reduced area for pasture.	Increased competition. Physical injury (e.g. from rabbit warrens). Increased young mortality from predation. Illness or mortality from livestock diseases transmitted by pest animals.	Damage to soil structure/ composition resulting in reduced area for native vegetation.	Increased competition. Increased mortality from predation. Illness or mortality from diseases transmitted by pest animals.
Pathogens	Reduced pasture quality from plant diseases.	Illness or mortality from livestock diseases. Reduced condition owing to reduced pasture quality from plant diseases.	Reduced biodiversity, resilience or area from plant diseases	Illness or mortality from diseases.

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4. RELEVANT STANDARDS AND PROCEDURES

In accordance with Condition 47c of the planning permit, this plan has been prepared and is to be implemented in accordance with the following documents. Table 3 details how this BMP addresses each of the key points of these documents.

- The *Invasive Plant and Animal Management Policy Framework* (DEDJTR 2017a);
- The *Biosecurity Guidelines for Movement of Equipment Contractors between Farms* (DEDJTR 2009); and
- The *Biosecurity Manual for the Viticulture Industry* (PHA 2013).

Table 3: Meeting the key focus of the relevant standards and procedures in this BMP

Document	Key points	How this is addressed in this BMP
<i>Invasive Plant and Animal Management Policy Framework</i>	Prevention provides a higher return on investment than eradication, eradication is better than containment and containment is better than managing impacts of widespread invasive species	The focus of this BMP is on managing known risks, and monitoring through all project phases to allow for early identification of any new biosecurity risks within the Project site. Section 6 details the Protocol for the identification and management of risks within the project site.
<i>Biosecurity Guidelines for Movement of Equipment Contractors between Farms</i>	Decontamination is essential both before entry and egress to a property. This ensures that any foreign matter remains on the land of origin, rather than taking it to another location.	Decontamination procedures are detailed in Section 5.3, and adopt the recommendations of these Guidelines.
<i>Biosecurity Manual for the Viticulture Industry</i>	<p>Conducting regular monitoring is a fundamental part of vineyard management practices and gives the best chance of spotting a new pest soon after it arrives.</p> <p>People moving between vineyards, nurseries and other horticultural regions can spread pests on vehicles, equipment, boots and clothing.</p> <p>Contractors, re-sellers, service providers and drivers of delivery trucks (nursery stock, fertiliser, etc.) and earth moving equipment should be requested to clean their vehicles and equipment before entering your vineyard</p>	This Manual has limited relevance to the Project Site (which does not include Viticulture areas); however, the over-arching framework of monitoring, early detection and management of traffic (people and equipment) into and out of the site to reduce biosecurity risks have been adopted in this BMP.

Other useful resources that have been used in the preparation of this BMP include:

- *A Guide for Machinery Hygiene for Civil Construction* (CCF 2011);
- *Biosecurity - A Practical Approach for Beef Herds* (DEDJTR 2008b);
- *Biosecurity for sheep producers* (DEDJTR 2008a);
- *Broad Spectrum Disinfectants* (DAWR 2017);
- *CCF Environmental Guidelines for Civil Construction* (CCF 2010); and
- *Machinery Hygiene* note (DEDJTR 2017b).

Full details of these documents are provided in the references (Section 8).

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5. PROCEDURES TO PREVENT BIOSECURITY RISK

5.1. Overview

Biodiversity efforts within Victoria are increasingly directed to preventing the establishment of new species of concern, in accordance with the Victorian Biosecurity Strategy (DEDJTR 2017a). Analyses of biosecurity programs generally show that prevention provides a higher return on investment than eradication, eradication is better than containment and containment is better than managing impacts of widespread invasive species (DEDJTR 2017a). Additionally, diseases or pests that may actually be taken onto land can be less important than what the contractor may much later be accused of introducing (DEDJTR 2009).

For these reasons, adherence to procedures to prevent biosecurity risk, including diligent documentation of biosecurity management actions undertaken, are fundamental to this Plan.

Within the wind farm site there are eleven separate properties, as well as the road reserve of the public road network. The following procedures to prevent biosecurity risk apply to any movement of individuals, materials or machinery into, out of, or between the eleven properties or the road reserve.

Identified pathways that pose a high biosecurity risk include contaminated vehicles, machinery and materials.

The construction phase is the time of highest biosecurity risk, as the most traffic, soil disturbance and movement of material occurs during this phase. Nonetheless, the following actions are to be implemented during the construction and operational phase of the wind farm.

The following actions are to be implemented to prevent biosecurity risks:

- Minimise the number of entry and exit points from each property;
- Display biosecurity signs, with clear instructions and contact details at all entry points;
- All machinery will enter and exit work sites along defined routes;
- The site induction for all employees and visitors is to include the biosecurity procedures (see Section 5.2);
- Set-up and maintain decontamination bays at all site entries and between properties, where necessary to prevent the spread of weeds across the site;
- Implement decontamination procedures (see Section 5.3), including record keeping of all decontaminations undertaken (see Section 5.5.1);
- Implement measures to ensure any materials imported to the site are free from biosecurity risks (see Section 5.4), including record keeping of all materials imported (see Section 5.5.2); and
- Fence-off and sign no-go zones sensitive areas (such as native vegetation to be retained and wetlands). More details are provided in the *DDWF Vegetation Management Plan*.

5.2. Induction

The induction for all staff and visitors will cover the DDWF biosecurity procedures as outlined in the Environmental Management Plan and, where relevant, will include:

- Identified biosecurity risks for the site, and responsibilities under the CaLP Act;
- Entry and exit points to be used;
- Decontamination procedures, including decontamination logs;
- The location of decontamination bays;
- Material importation procedures, including material importation logs;
- Responsibilities in relation to noxious weed management, including noxious weed management logs;
- Responsibilities in relation to pest management, including pest animal management logs; and
- Audit procedures.

5.3. Decontamination

Decontamination is essential both for the prevention of transmission of biosecurity risks and for stakeholder management such that landowners and the general public have confidence that the wind farm activities are not responsible for the transmission of biosecurity risks. Upon entry or exit from the DDWF all personnel, equipment and machinery must be in a state of cleanliness and free of soil, faeces, weeds and seeds (DEDJTR 2009). A decontamination bay will be established at the site entrance (see Figure 2 of the EMP) in order to manage the spread of high-threat weeds. Weeds will be monitored weekly and should new noxious weed outbreaks be discovered these will be treated through spot spraying and new decontamination bays will be established. Once the access tracks are established, vehicles will stay on these tracks and not enter any adjacent land.

Decontamination involves the following steps:

1. A **careful check** of machinery/equipment to identify those areas of highest concern, and the most appropriate decontamination methods.
2. **Removal of soil and debris** from tools, equipment and machinery. This can include one or a combination of the following (DEDJTR 2017a). The most appropriate method(s) will depend on the nature of the machinery, vehicle, piece of equipment, where it is coming from, what it has been used for and whether any attached soil, dust or weed propagules were identified:
 - a. **Physical removal:** Often undertaken prior to or at the completion of wash down or air blast. A hard bristle brush may be essential for more difficult soil, paying particular attention to the tyres, tracks and undercarriage of vehicles and machinery. Boots will be scrubbed clean; hands and other body parts may also need cleaning. (DEDJTR 2009).
 - b. **Wash-down:** achieved by applying water at a high pressure using a pressure cleaner or spray tank and pump. Pressure hosing with water will be sufficient to remove debris from most tools, equipment and machinery (DEDJTR 2009).
 - c. **Air blast:** assists decontamination in hard to reach areas by using a compressor with hose.
 - d. **Vacuuming:** can help remove contaminants from the interior surfaces of machinery.
3. **Disinfection** by spraying an appropriate disinfectant at the recommended strength to the cleaned boots, tools, equipment or machinery. This could include bleach diluted to 1% active sodium hypochlorite (Farm Biosecurity 2012) or commercial

disinfectants that meet the federal Department for Agriculture and Water Resources standards for broad spectrum disinfectants (DAWR 2017).

Decontamination can be undertaken at a decontamination bay or using a mobile decontamination kit appropriate to the type of work being undertaken and the biosecurity risks present. For example, a mobile decontamination kit that can be kept in a light vehicle may contain a hard bristle brush for removing soil from tyres and boots, and a disinfection spray pack.

Decontamination bays, where established, will consist of a pad for inspecting and cleaning vehicles, plant and equipment. The pad will be lined with an inert material (property dependant) or to a minimum depth of 20 centimetres. The pad will be sloped away from any native vegetation and runoff from wash-downs will be directed to a shallow earthen sump of sufficient capacity to capture all waste water and solids. The sump will be protected from rainfall to prevent overflow.

Photograph 1 illustrates some of the critical contamination areas for vehicles and machinery.



Photograph 1: Critical contamination areas for vehicles and machinery (DEDJTR 2009)

5.4. Importation of material

All materials imported to the DDWF are a potential biosecurity risk. Procedures to reduce the biosecurity risk when importing materials are to be implemented when materials are imported to the site, or are transported between properties or the road reserve, and are as follows:

- A declaration form or equivalent is to be provided by the supplier of materials to confirm they are free of weed seeds and pathogens;
- Materials are to be inspected on arrival;

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- Records are to be kept of all materials transported to site including the supplier, composition and source;
- The transport provider is to follow the decontamination procedures described in Section 5.3 for all vehicles, machinery and equipment;
- Noxious weeds are to be removed from any areas to be used to stockpile materials; and
- Material or soil that may be contaminated are not to be removed without appropriate treatment and permits.

5.5. Weed Management

Noxious weeds declared under the CALP Act will be managed as described below.

Pre-construction:

- A Noxious Weed Management Log (see example in Appendix 3) will be created and stored at the site office
- A baseline survey of noxious weed species, locations and cover will be undertaken within the month prior to commencement of construction works. The location of infestations of noxious weeds will be mapped, and all results included in the Noxious Weed Management Log.

Construction:

- Personnel will report incidental sightings of infestations of noxious weeds, so that appropriate control measures can be implemented. Incidental sightings and any necessary follow-up control will be included in the Noxious Weed Management Log.
- If incidental monitoring during construction highlights a trend of increased noxious weed infestations then a weed control program will be developed in consultation with the landowner(s) and DEDJTR.

Post-construction:

- A post-construction survey of noxious weed infestations will be undertaken within one month following the completion of construction works. The location of infestations of noxious weeds will be mapped, and all results included in the Noxious Weed Management Log.
- Upon completion of the post construction control period, a summary report will be provided to the DEDJTR within two months of the completion of construction, outlining the methods used and results of noxious weed management.
- Where noxious weed infestations are found to be greater (higher cover, more widespread or new noxious weed species) in the post construction site survey than in the baseline site survey, then a weed control program will be developed in consultation with the landowner(s) and DEDJTR. Any weed control program will include measures to ensure that off-target species are not impacted (such as the use of spot-spraying and bushland contractors near areas of native vegetation).

Operation:

- Personnel will report incidental sightings of noxious weeds, so that appropriate control measures can be implemented. Incidental sightings and any necessary follow-up control will be included in the Noxious Weed Management Log.

- If incidental monitoring during operation highlights a trend of increased noxious weed infestations then a weed control program will be developed in consultation with the landowner(s) and DEDJTR. Any weed control program will include measures to ensure that off-target species are not impacted (such as the use of spot-spraying and bushland contractors near areas of native vegetation).

5.6. Pest Animal Control

Pest animals declared under the CALP Act will be managed as described below.

Pre-construction:

- A Pest Animal Management Log (see example in Appendix 3) will be created and stored at the site office
- A baseline survey of pest animal numbers will be undertaken within the month prior to commencement of construction works. This will include a daytime survey of dens/warrens and a night-time spotlight survey for rabbits, hares and foxes. The locations of warrens and dens will be mapped, and all results included in the Pest Animal Management Log.

Construction:

- Personnel will report incidental sightings of warrens and dens (including at the perimeter of soil stockpiles and concrete slabs), so that appropriate control measures can be implemented. Incidental sightings and any necessary follow-up control will be included in the Pest Animal Management Log.
- If incidental monitoring during construction highlights a trend of increased pest animal numbers then a pest control program will be developed in consultation with the landowner(s) and DEDJTR.
- All food waste will be disposed of appropriately, with any non-compliances and follow-up actions to be recorded within the Pest Animal Management Log.

Post-construction:

- A post-construction survey of pest animal numbers will be undertaken within one month following the completion of construction works. This will include a daytime survey of dens/warrens and a night-time spotlight survey for rabbits, hares and foxes. The locations of warrens and dens will be mapped, and all results included in the Pest Animal Management Log.
- Upon completion of the post construction control period, a summary report will be provided to the DEDJTR within two months of the completion of construction, outlining the methods used and results of this pest animal management.
- Where pest animal numbers are found to be greater in the post construction site survey than in the baseline site survey, then a pest control program will be developed in consultation with the landowner(s) and DEDJTR.

Operation:

- Personnel will report incidental sightings of warrens and dens (including at the perimeter of soil stockpiles and concrete slabs), so that appropriate control measures can be implemented. Incidental sightings and any necessary follow-up control will be included in the Pest Animal Management Log.

- If incidental monitoring during operation highlights a trend of increased pest animal numbers then a pest control program will be developed in consultation with the landowner(s) and DEDJTR.

5.7. Record keeping

It is essential to keep records of all biosecurity risk prevention procedures undertaken. On a day-to-day basis, these will include decontamination logs for each decontamination point (which will allow personnel to monitor and ensure decontamination bays are being used), logs of all materials imported, the pest animal management logs and audits of biosecurity management actions. Diligent record keeping demonstrates compliance with the relevant legislation and policies and provides traceability in the event of an outbreak of biosecurity risks.

5.7.1. Decontamination logs

The following information is to be recorded at each decontamination point for every vehicle, machine or piece of equipment:

- Date;
- Time;
- The name of the person undertaking decontamination;
- Description (whether machinery, a vehicle or equipment);
- Identification (rego, serial number);
- Origin (where the machinery, vehicle, piece of equipment or personnel has come from);
- Destination (where the machinery, vehicle, or equipment is going to);
- Sign off that a check (for attached soil, dust or weed propagules) has been undertaken;
- Tick any physical removal of soil and debris methods undertaken; and
- Sign off that disinfection by spraying an appropriate disinfectant at the recommended strength has been undertaken.

An example decontamination log is attached as Appendix 1.

5.7.2. Material importation logs

The following information is to be recorded for all materials imported into the site:

- Date;
- Time;
- The name of the person responsible for the receipt of materials;
- Supplier;
- Composition;
- Source;
- Destination; and
- Sign off that a declaration form or equivalent has been provided by the supplier to confirm they are free of weed seeds and pathogens.

An example material importation log is attached as Appendix 2.

5.7.3. Noxious weed management logs

The following information is to be recorded for all incidental noxious weed sightings, the results of noxious weed monitoring, and any noxious weed control undertaken within the site:

- Date;
- The noxious weed species observed;
- The type of observation (Incidental observation/ survey/ control action);
- A brief description of the observation/ activity (e.g. the location, extent and cover of the noxious weed infestation);
- The person reporting the noxious weed infestation;
- Whether follow-up mitigation measures are required; and
- The method of any follow-up mitigation measures and date completed (where required).

An example noxious weed management log is attached as Appendix 3.

5.7.4. Pest animal management logs

The following information is to be recorded for all incidental pest animal sightings, the results of pest animal monitoring, and any pest animal control undertaken within the site:

- Date;
- The pest animal species observed;
- The type of observation (Incidental observation/ survey/ control action);
- A brief description of the observation/ activity (e.g. the location and extent of the warren);
- The person reporting the pest animal activity;
- Whether follow-up mitigation measures are required; and
- The method of any follow-up mitigation measures and date completed (where required).

An example pest animal management log is attached as Appendix 4.

5.8. Audit

Compliance will be monitored by the site supervisors and HSE personnel on an ongoing basis. Internal audits of the biosecurity management procedures will be undertaken weekly by the site supervisor or environmental manager and are to include:

- Check that only designated site entrances and exits are being used;
- Check that all site entrances and exits have appropriate biosecurity signage;
- Check induction logs;
- Check all decontamination bays are in-place and in good working order;
- Check decontamination logs;
- Check material importation logs;

- Check noxious weed management logs;
- Check pest animal management logs; and
- Check monitoring logs.

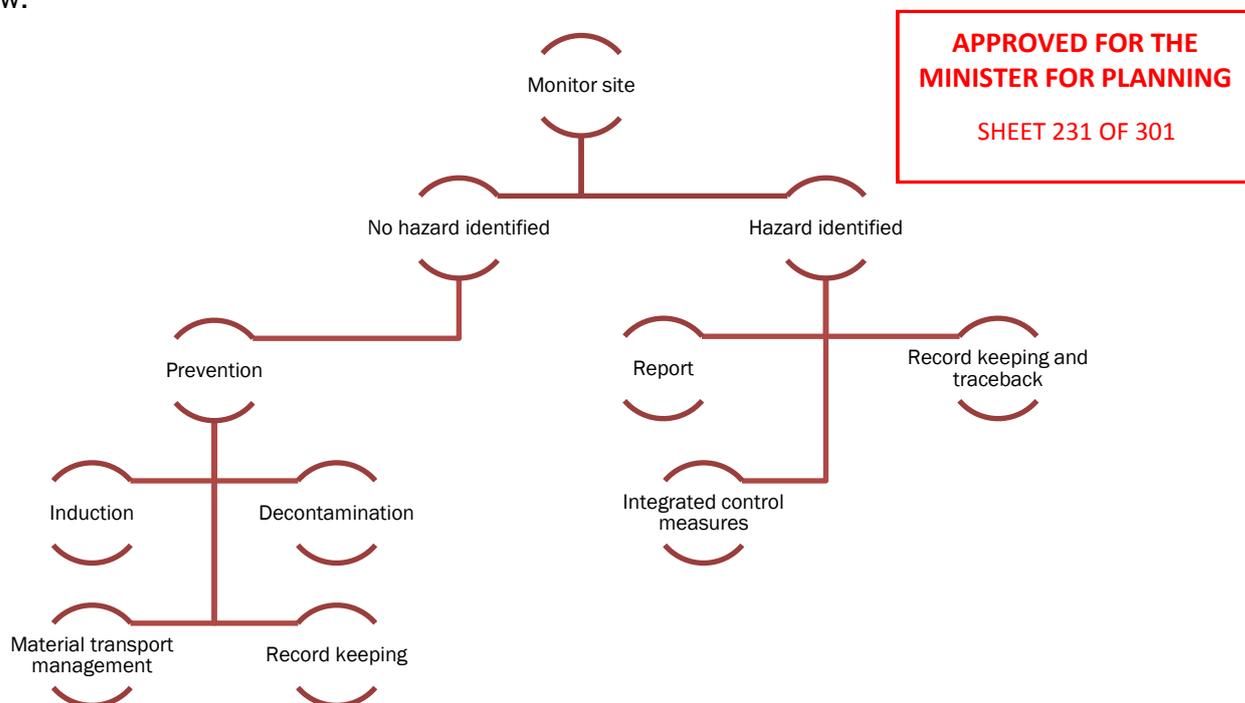
Audit documents are to be filed to demonstrate compliance with the relevant legislation and policies and provide traceability in the event of an outbreak of biosecurity risks.

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6. PROTOCOL FOR IDENTIFICATION AND MANAGEMENT OF BIOSECURITY RISKS

The protocol for identification and management of biosecurity risks at DWF is illustrated below.



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6.1. Monitoring

Weekly monitoring of the wind farm site for new biosecurity risks is to be undertaken by the environmental representative of the wind farm site and will include:

- Access roads and tracks;
- Decontamination points and decontamination logs (to verify and ensure usage);
- Materials transported to site;
- Stockpiles; and
- Areas of soil disturbance.

Monitoring will focus particularly on biosecurity risks that have been identified as potentially occurring at the wind farm site because of their presence in the area or source of materials. The results of all monitoring are to be documented, even where nothing is found.

Water discharge areas from decontamination bays will be monitored for the presence of weeds, and any sediment collected that may contain weed seeds will be appropriately treated or buried with adequate soil cover to prevent seed germination.

6.2. Identification

The following factors will allow for identification of any biosecurity risks, should they arise:

- Landowners are to be consulted by the environmental representative or site manager with regards to past, known and potential biosecurity risks such as known weeds, past outbreaks of livestock, pasture or crop diseases or known occurrences of these in the area; and

- The site induction undertaken by the environmental representative is to include information on known and potential biosecurity risks and how to identify them.

6.3. Reporting

Any biosecurity risk identified will be reported by the site manager on **1800 084 881** for weeds and **1800 675 888** for animal diseases. Following this:

- The relevant state authority will be notified and provide guidance;
- For weeds, mark the area with stakes and take GPS coordinates;
- If livestock are exhibiting symptoms, isolate affected livestock immediately;
- Do not allow movement of personnel, vehicles or machinery near affected area/animals;
- Wash hands, clothing, boots and equipment that has come into contact with biosecurity risk; and
- Do not touch or transport affected plants, animals or soil without advice from the relevant state authority.

The landowner and relevant state authority must be consulted to advise on eradication, containment or control options.

6.4. Traceability

Procedures to enable traceability if a new biosecurity risk is identified include:

- The site induction log;
- The decontamination log;
- The materials transport log;
- The monitoring log; and
- The results of weekly audits.

These logs will be maintained by the site manager and audited by the environmental representative.

6.5. Integrated control measures

In the event that a new biosecurity risk is identified, the following control measures are to be implemented by the environmental representative, site manager and construction personnel, in concert with those prescribed by the relevant state authority and agreed with the landowner:

- Affected areas are to be fenced off and closed to foot and vehicle traffic;
- Plan work to go from unaffected areas to affected areas;
- Drive on defined roads and tracks as much as possible;
- Minimise works in wet and muddy conditions;
- Use mats in vehicles to enable easy cleaning at an appropriate location; and
- Where practical, use a removable screen over the grill of vehicles to prevent seeds or soil lodging in the radiator.

7. IMPLEMENTATION OF THE BIOSECURITY MANAGEMENT PLAN

Table 3 identifies the project phases and responsibilities for implementation of the Biosecurity Management Plan.

Table 4: Project phases and responsibilities for plan implementation

Project phase	Action to be implemented	Relevant Section	Responsibility
Pre-construction	Induction	Section 5.2	Environmental representative
	Identify entrances and exits to properties or the road reserve	Section 5.1	Site manager
	Install signage at entrances and exits to properties or the road reserve	Section 5.1	Site manager
	Install decontamination bays at site entrances and between properties, where required	Section 5.3	Site manager, construction company
	Create a Noxious Weed Management Log to record all noxious weed observations, surveys and control actions.	Section 5.5 and Appendix 3	Environmental representative
	Create a Pest Animal Management Log to record all pest animal observations, surveys and control actions.	Section 5.6 and Appendix 4	Environmental representative
	Carry out a baseline noxious weed survey.	Section 5.5	Qualified ecologist
	Carry out a baseline pest animal survey, including a daytime survey of dens/warrens and spotlight survey for rabbits and foxes.	Section 5.6	Qualified ecologist
Construction	Decontaminate when moving into or out of the site, or between properties where required	Section 5.3	Construction personnel
	Maintain decontamination log	Section 5.7.1	Site manager
	Maintain material importation log	Section 5.7.2	Site manager
	Maintain noxious weed management log	Section 5.7.3	Environmental representative
	Maintain pest animal management log	Section 5.7.4	Environmental representative
	Monitor for new biosecurity risks	Section 6.1	Environmental representative
	Audit biosecurity risk management actions	Section 5.8	Site manager

Project phase	Action to be implemented	Relevant Section	Responsibility
Post-construction	Undertake post-construction survey of noxious weed infestations within one month of completion of construction works. Map locations of noxious weed infestations. Include all results in the Noxious Weed Management Log.	Section 5.5	Qualified ecologist
	Undertake post-construction survey of pest animal numbers within one month of completion of construction works. This will include a daytime survey of dens/warrens and a night-time spotlight survey for rabbits, hares and foxes. Map locations of warrens and dens. Include all results in the Pest Animal Management Log.	Section 5.6	Qualified ecologist
	Provide a noxious weed summary report to the DEDJTR within two months of the completion of construction, outlining the methods used and results of noxious weed management.	Section 5.5	Environmental representative
	Provide a pest animal summary report to the DEDJTR within two months of the completion of construction, outlining the methods used and results of pest animal management.	Section 5.6	Environmental representative
Operation	Decontaminate when moving into or out of the site, or between properties where required	Section 5.3	Construction personnel
	Maintain decontamination log	Section 5.7.1	Site Manager
	Maintain noxious weed management log	Section 5.7.3	Site Manager
	Maintain pest animal management log	Section 5.7.4	Site Manager
	Monitor for new biosecurity risks	Section 6.1	Environmental representative
	Audit biosecurity risk management actions	Section 5.6	Site Manager

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Appendix J - Fauna Management Plan

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**DUNDONNELL WIND FARM
FAUNA MANAGEMENT PLAN**

**Dundonnell Wind Farm Pty Ltd
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Revision History

Revision	Description	Date	Prepared By	Approved By
14.0	Initial draft provided to Tilt Renewables and Zenviron for comment	7/5/2018	J Clerke	I Kulik
14.1	Revised draft incorporating comments from Tilt Renewables and Zenviron	04/06/2018	E Ebsworth	I Kulik
14.2	Revised draft incorporating comments from Tilt Renewables and Zenviron	04/06/2018	I. Kulik	-
14.3	Revised draft addressing comments from DELWP	25/09/2018	I. Kulik	-
14.4	Revised to include reference to EMP Appendix M figures	11/10/2018	E. Dagher	M Glass
14.5	Updated in response to agency comments	27/11/2018	E.Dagher	I. Kulik

1. INTRODUCTION

This Fauna Management Plan (FMP) has been prepared by Brett Lane & Associates (BL&A) for Zenviron Pty Ltd, on behalf of Dundonnell Wind Farm Pty Ltd, in relation to the Dundonnell Wind Farm (DDWF).

The Dundonnell Wind Farm was approved by the Minister for Planning in July 2016 under Planning Permit 2015/23858 (the Planning Permit), issued 23 October 2016.

This FMP has been prepared in accordance with of Condition 59 of the Planning Permit and is generally in accordance with Chapter 25 of the Dundonnell Wind Farm EES (June 2015). The objective of this plan is to provide management and mitigation measures to avoid and minimise potential impacts on significant fauna, including: Striped Legless Lizard, Fat-tailed Dunnart, Growling Grass Frog, Corangamite Water Skink and Golden Sun Moth.

Table 1 details which sections of the Fauna Management Plan comply with each of the specific requirements outlined in Condition 59 of approval for the project. In addition, **Section 2** includes a description of the project, **Section 3** identifies the objectives and performance criteria of this management plan, **Section 4** summarise identified species of concern at DDWF and **Section 6** details the timeframe and responsibilities and performance criteria for implementation of the Fauna Management Plan.

This Plan was prepared by a team from BL&A, comprising Jackson Clerke (Zoologist) and Inga Kulik (Senior Ecologist and Project Manager).

Table 1: How this FMP addresses Condition 59

Condition	Requirement	Plan Section(s)
59	A fauna management plan is to be prepared in consultation with DELWP and the responsible authority to the satisfaction of DELWP and the responsible authority. The fauna management plan must include:	-
a.	Management and mitigation measures to address impacts to fauna utilising remnant native vegetation.	Section 4
b.	Management and mitigation measures to address impacts to native fauna, including impacts to Striped Legless Lizard, the Fat-tailed Dunnart, the Growling Grass Frog, the Corangamite Water Skink and the Golden Sun Moth.	Section 4
c.	Salvage and translocation protocol for the Striped Legless Lizard and Fat-tailed Dunnart.	Section 4.2, Appendix 1
d.	Marking meteorological mast guy lines within the turbine free buffer area in order to minimise Brolga collision.	Section 4.5

2. PROJECT DESCRIPTION

2.1. Wind farm site

The DDWF is located in Western Victoria, 23 kilometres north-east of Mortlake and 21 kilometres west of Derrinallum (Figure 1 of the EMP). The site comprises an approximate area of 4,200 hectares, with a 220-hectare project footprint across 11 farming properties. The site is within the Moyne Shire.

The wind farm site lies between private landholdings to the north, east and west, and the Woorndoo-Dundonnell Road to the south. The wind farm site includes the roadsides of Ennerdale Lane, Fashams Lane, Dohertys Lane, Post Office Lane and Dawes Lane.

Existing infrastructure at the site and on the surrounding land is predominately agricultural in nature and includes isolated dwellings, sheds, access tracks and fencing.

The majority of the wind farm site is unimproved pasture used for livestock grazing, with some areas of cleared land for improved pasture. Land use surrounding the wind farm site includes grazing and cropping.

The wind farm site comprises a series of volcanic flows which have formed a mosaic of basalt ridges (barriers). The majority of the wind farm site is dominated by pasture grass and agricultural and environmental weeds. Native vegetation is limited to small scattered patches of shallow grassy wetland, escarpment shrubland, plains grassland and scattered River Red Gum trees.

The land to the west of the wind farm has been subject to more intense agricultural activities. Here also, improved pasture and typical introduced agricultural and environmental weeds, as well as extensive cropping, dominate the landscape.

2.2. Project components

The Project will consist of the following components, as shown in Figure 1 of the EMP and detailed in Section 2 of the Environmental Management Plan for this site:

- Eighty wind turbines, including base construction area and adjacent construction pads;
- Turbine access tracks within the wind farm site including a network of underground 33 kV distribution cables that connect to the onsite substation;
- The major site entrance access track, which runs from Woorndoo-Streatham Road to the wind farm site;
- The equipment lay-down areas and site office in the western part of the site;
- Temporary concrete batching plant;
- Two proposed on-site quarry sites; and
- On-site electrical substation.

The wind farm will be connected to the National Electricity Market via a 38km 220kV transmission line, and offsite substation, to the Mortlake Power Substation (MOPS). This infrastructure has been approved under a separate Moyne Planning Permit (PL15/075) and will be subject to a separate Environmental Management Plan.

The Mt Fyans Wildlife Reserve, located in the centre of the wind farm site, is excluded from any wind farm related development and will not support any wind farm infrastructure.

3. SIGNIFICANT FAUNA VALUES

A series of fauna assessments have been undertaken at DDWF which are compiled in the Flora and Fauna report of DDWF (BL&A 2015). The important findings of these, relevant to this FMP under Condition 59, are summarised below.

3.1. DDWF fauna and habitat assessments

The majority of the wind farm site comprises agricultural land which is of low quality for fauna due to its extensive modification and the removal of most habitat elements for agricultural development. Some scattered trees, small patches of woodlands, grassland or stony knoll shrubland, wetlands and creek lines on the wind farm site could provide moderate to high quality habitat for fauna species.

Aquatic habitats on the wind farm site are limited in extent and confined to small wetlands and narrow watercourses, including spring fed drainage lines, in the south eastern part of the site.

Victoria Biodiversity Atlas (VBA) and the EPBC Act Protected Matters Search Tool (DoE) indicate that within the radius of investigation, 38 threatened fauna species (24 birds, six mammals, two reptiles, two frogs, three fish and one invertebrate) listed on the EPBC Act and/or FFG Act, occur or potentially occur due to the presence of suitable habitat in the radius of investigation (10 kilometres around wind farm site boundary).

Following further investigations, 21 of these species, including 15 birds, two mammals, two reptiles, one amphibian and one invertebrate, were considered to have potential to occur within the wind farm site or along the major site access track due to the presence of suitable habitat or the species being recorded during the overview assessment or targeted surveys.

This FMP focuses on primarily terrestrial based species and as such does not address birds or bats, which are addressed in separate management plans. Therefore, the following species of concern, address by the FMP and outlined under Condition 59, as identified in the flora and fauna report (BL&A 2015) are: Striped Legless Lizard, Fat-tailed Dunnart, Growling Grass Frog, Corangamite Water Skink and Golden Sun Moth. Habitat considered to have the potential to support these species is shown in Figure 3 of the EMP.

3.1.1. Striped Legless Lizard

Striped Legless Lizard is listed as *vulnerable* under the EPBC Act, listed as threatened under the FFG Act and listed as *endangered* on the DELWP threatened species advisory list (DELWP 2013).

In view of the presence of potentially suitable habitat in areas of remnant native grassland and shrubland, it was concluded that there was potential for this species to occur within the proposed wind farm site. Accordingly, a targeted survey program was instigated however no Striped Legless Lizards were recorded during any surveys in the wind farm site.

The VBA shows nine recent records of Striped Legless Lizard at four locations within 10 kilometres of the wind farm site, the most recent at each site dated 2005 to 2007. These records were all located from rail or road reserves.

3.1.2. Fat-tailed Dunnart

This species is listed as *Lower Risk - Near Threatened* on the DELWP threatened species advisory list (DEPI 2013).

The presence of suitable remnant vegetation and the review of existing information indicated that Fat-tailed Dunnart is likely to occur in the wind farm site. This species was recorded in Stony Knoll Shrubland and rocky outcrops during targeted surveys.

The Fat-tailed Dunnart was recorded twice during the targeted surveys and is vulnerable to impacts from the proposed wind farm. Mitigation measures will be implemented should any potential habitat for this species be proposed to be removed, for example stone walls or rocks.

3.1.3. Growling Grass Frog

The Growling Grass Frog is listed as *vulnerable* under the EPBC Act. It is also listed as threatened under the FFG Act and *endangered* in Victoria under the DELWP threatened species advisory list (DEPI 2013).

The overview flora and fauna survey of the wind farm site showed that potential habitat for the EPBC and FFG Act listed Growling Grass Frog occurs within water bodies and drainage lines within and downstream of the wind farm site. Habitats surveyed (BL&A 2015) were considered to have potential to support the species, but no Growling Grass Frogs were detected during the survey.

The VBA holds four recent records of Growling Grass Frog within a ten-kilometre radius of investigation, dated between 1992 and 2011. The nearest record from 1992 is located on the wind farm site in the south-eastern section in an area not proposed to be supporting turbines or any associated infrastructure. The closest proposed turbine is approximately 400m to the southwest of this site. The remaining three records are six to seven kilometres away from the wind farm site boundary.

3.1.4. Corangamite Water Skink

The Corangamite Water Skink is listed as *endangered* under the Commonwealth EPBC Act, threatened under the Victorian FFG Act and is considered *critically endangered* in Victoria (DEPI 2013).

The VBA holds ten records of Corangamite Water Skink within a ten-kilometre radius of investigation. The closest records to the wind farm site are in two wetlands to the south of Woorndoo-Dundonnell Road, including one wetland along watercourses that flow from the southern part of the wind farm site. No targeted surveys were conducted for this species as it is quite difficult to detect, even if present, as such; a precautionary principal has been adopted for habitat where it has the potential to occur.

The majority of the wind farm site (97% of the area) does not provide habitat for Corangamite Water Skink. Potential habitat for the Corangamite Water Skink exists in the south-eastern and north-western part of the wind farm site. The vast majority of the potential habitat at the wind farm site (95%) was found to be of low quality for Corangamite Water Skink due to the lack or low density of rocks, the lack of deep fissures and shrubs, the wetlands being ephemeral and/or disturbed by stock grazing.

3.1.5. Golden Sun Moth

The Golden Sun Moth is listed as *critically endangered* under the Commonwealth EPBC Act threatened under the Victorian FFG Act and is considered *critically endangered* in Victoria (DEPI 2013).

The Golden Sun Moth was assessed in the overview fauna assessment to potentially occur within the wind farm site or along the major site access track.

Potential habitat for the Golden Sun Moth includes native grassland areas with high abundance of Wallaby Grass as well as exotic pastures including Chilean Needle-grass. Ideal habitat is typically low and open with tussock structures and bare ground in between.

The Golden Sun Moth has been previously recorded in grasslands at Darlington, approximately 6.5 kilometres south-east of the wind farm site.

The vast majority of the wind farm site is unsuitable for Golden Sun Moth since it is dominated by improved pasture (comprising introduced grass species, but no Chilean Needlegrass) and typical introduced agricultural and environmental weeds. Suitable habitat for the Golden Sun Moth occurs in one paddock at the wind farm site. This area will be avoided, fenced as a no-go area and no habitat loss for this species is anticipated from the construction or operation of the proposed wind farm.

All of the above species are considered to potentially occur on the wind farm site. As such, management and mitigation measures are required to avoid significant impacts to these species as a result of construction and operation.

4. MANAGEMENT AND MITIGATION MEASURES

This section of the FMP summarises pre-construction and construction phase control measures designed to prevent or mitigate potential impacts on native fauna utilising native remnant vegetation, on the Striped Legless Lizard, Fat-tailed Dunnart, Growling Grass Frog, Corangamite Water Skink and Golden Sun Moth potential habitat, and on these species if they are detected. Refer to EMP Appendix M Figure 3 for fauna habitat areas, and Figure 5 for fauna habitat removal.

4.1. General Fauna Habitat

All scattered trees and woodland patches have been avoided and the turbines have been located on elevated ground, away from low lying wetlands and creek lines. The likelihood of a significant impact on fauna species and their habitats is considered low.

No wetlands and drainage lines (aquatic habitats) will be affected by turbine construction and operation and therefore it is very unlikely that the project will affect these habitats.

- In habitats shown in Figure 3 of the EMP that are to be affected by construction, surface rocks if present will be moved aside within the construction layout and placed back after construction works into disturbed areas that are not occupied permanently by infrastructure. Native grasses will be re-established through rehabilitation measures described in the Vegetation Management Plan.
- All machinery will enter and exit work sites along defined routes, thereby avoiding impacting on fauna habitat including native vegetation, water ways or cause soil disturbance and weed spread.
- All machinery brought on site will be weed and pathogen free (see Biosecurity Management Plan) and checked regularly for leaks.
- All machinery wash down, lay down and personnel rest areas will be defined (fenced) and located in disturbed areas.
- All open trenches, pits or excavations that are to be left for more than one night or longer must adhere to the 'Open Trench Procedure' (see Fauna Salvage and Relocation Protocol).
- Weed control, by an experienced practitioner, will be carried out along disturbed areas after construction to control any weed outbreaks associated with construction. Control targets and measures are described in the Native Vegetation Management Plan.

4.2. Striped Legless Lizard and Fat-tailed Dunnart

Targeted Striped Legless Lizard and Fat-tailed Dunnart surveys were undertaken in 2013. No Striped Legless Lizards were recorded, but one Fat-tailed Dunnart was recorded on the wind farm site as well as one Fat-tailed Dunnart outside the current wind farm site.

As Striped Legless Lizard was not detected within the wind farm site during targeted surveys, no significant impacts on this species are expected from this project. However, a salvage protocol will be implemented in the unlikely event that the species is detected during construction or operation of the proposed wind farm. This protocol will also cover Fat-tailed Dunnart. Triggers and methods for such a protocol are detailed in Appendix 1.

To maximise the effectiveness of mitigation measures to avoid impacts on Striped Legless Lizard and Fat-tailed Dunnart, the following measures will be implemented:

- Negative impacts to areas of native vegetation will be avoided by micro-siting turbines and associated structures away from these, where possible.
- Training of construction personnel in the identification of Striped Legless Lizard and Fat-tailed Dunnart will be undertaken prior to construction.
- Should any of these species be found then works will stop within a 30m buffer area around the affected area and DELWP will be notified within 24 hours.
- Implementation of a salvage and translocation protocol (refer to Appendix 1) to be implemented during construction works in Striped Legless Lizard habitat. On-site personnel will also be inducted on this protocol (see Figure 3 of the EMP for habitat locations that will be impacted).
- A *licensed* fauna recovery ecologist with knowledge of and experience in Striped Legless Lizard salvage methods will implement any salvage operation.

4.3. Growling Grass Frog and Corangamite Water Skink

Potentially suitable habitat was detected for the Corangamite Water Skink and Growling Grass Frog; however, these habitats are not to be impacted by the wind farm construction and operation since most of the habitat lies within a turbine exclusion buffer to minimise impacts on Brolga.

As a precautionary mitigation measure a 55m buffer has been applied around the water bodies and drainage lines that could provide potential habitat for this species (Figure 3 of the EMP). No turbines or related infrastructure will be placed within these buffers.

To avoid impacts on Corangamite Water Skink, the initial turbine layout has been revised to locate turbines as far away from wetlands as possible. No turbines or associated infrastructure are located within the proposed 55m buffer and the closest turbine is more than 100 metres away from wetlands or waterways.

To maximise the effectiveness of mitigation measures to avoid impact on Growling Grass Frog and Corangamite Water Skink, the following will be employed.

- Training of construction personnel in the identification of Growling Grass Frog and Corangamite Water Skink will be undertaken prior to construction.
- A minimum buffer of 55 metres has been applied to potential habitat such as wetlands, creeks and drainage lines.
- Buffered areas will be marked as designated ‘no go areas’ with appropriate signage, where construction occurs within 100 meters of aquatic habitat.
- Best practice erosion control measures will be implemented prior to the commencement of construction activities and continue throughout the operation of the wind farm (see Soil and Erosion Plan for detailed measures and implementation).
- Temporary drift fencing to be installed beside road ways and tracks when in regular use for construction within 100 metres of wetland habitat for Growling Grass Frog. This will mitigate against road deaths of the species occurring.
 - Drift fence material at least 1 m high to prevent frogs jumping over it;
 - Tall vegetation within a metre either side of the fence will be trimmed to prevent frogs jumping over the top of the fence; and
 - The fence will be dug or pegged in so that frogs cannot move underneath the fence and will be kept tight to avoid sagging.

- Any excavations that are left open overnight will need to be inspected the next morning:
 - Pits and trenches left open overnight will have an egress ramp (such as a timber plank) installed at each end at the completion of the day's works, to be removed in the morning before works recommence;
 - Before the morning before works commence, each open pit/trench will be inspected to ensure that no trapped fauna remains in the pit/trench; and
 - All collected fauna will be salvaged and relocated to habitats as set out in the salvage protocols below.
- Any Growling Grass Frog or Corangamite Water Skink observed in the construction footprint during construction activities must not be handled by unauthorised or unlicensed personnel.
- If any Growling Grass Frog or Corangamite Water Skink are observed in the construction envelope, then an emergency protocol will be implemented:
 - Should Growling Grass Frog be encountered during construction, all construction activities will cease within 30 meters until the frog has been salvaged.
 - A suitably qualified individual, licensed by DELWP (under the Wildlife Act) with knowledge of and demonstrated experience in frog salvage methods, must be immediately contacted so that they can salvage and relocate the frog appropriately to suitable habitat up or down stream within 100 metres of the point of the construction zone.
 - No handling of frogs will be undertaken by construction personnel without the relevant license, and handling will be in accordance with the permit conditions and animal ethics standards.
 - During salvage works, any incidentally captured fauna such as other frog species, reptiles or small mammals, will also be removed from harm. Any other person to assist in salvage works will work under the close supervision of the individuals listed on the permit.
 - A suitably qualified individual will be able to handle the frog using the following procedures (see also Murray et al 2011):
 - If no water is available for washing hands before starting surveys, a sterilising alcohol-based hand disinfectant will be used, such as AquaGel.
 - Amphibians will be handled and released as quickly as possible. Unused disposable latex or nitrile gloves will always be used when handling frogs. A new pair of gloves will be used for each individual. Gloves must be moist.
 - No more than one individual will ever be held in the same container simultaneously. A new bag or sterilised container will be used for each individual and containers/bags will not be reused.
 - All amphibians will be regarded as a high infection risk to other amphibians and will be handled in the above manner.
 - The translocation of individuals between habitats could pose threat to an existing population by spread of disease such as Chytrid fungus

(Heard *et al* 2010). Therefore, all fauna species captured will be released in the same watercourse it was located from to avoid spreading disease.

- Captured frogs will be released immediately, in nearby habitat that will not be impacted by the proposed works. Frogs will be released in dense vegetation, under rocks or under woody debris. Care will be taken to minimise disturbance of habitat features to prevent impacting other Growling Grass Frogs within the area.
- Habitat to which frogs are relocated will include adequate deep water (>0.5 m) and at least partial dense, fringing vegetation or beneath rocks for shelter.
- If a sick, dying or freshly dead wild amphibian is found, it will be collected, preserved and submitted for disease diagnosis. Sick or dying amphibians will be identified as those whose appearance or behaviour shows one or more of the following signs (taken from DECC 2008):
 - Darker or blotchy upper dorsal surface
 - Reddish/pink-tinged lower (ventral) surface and/or legs and/or webbing or toes
 - Swollen hind limbs
 - Very thin or emaciated
 - Skin lesions (sores, lumps)
 - Infected eyes
 - Lethargic limb movements
 - Abnormal behaviour (i.e. a nocturnal, burrowing or arboreal frog sitting out in the open during the day and making no attempt to move when approached)
 - Little or no movement when touched
- Once relocation is complete, works may re-commence. A report to DELWP will be prepared under the terms of any licence under the *Wildlife Act 1975*. The operations supervisor will report activities to the DELWP in a manner and timeframe specified by the *Wildlife Act 1975* licence requirements. The report will include:
 - Area of habitat salvaged;
 - Number of individuals found;
 - Number relocated;
 - Relocation sites; and
 - Number of dead specimens.
 - Records of non-target species are to be kept (location, species, number of individuals etc.) and forwarded to DELWP.

Based on this, no direct or indirect impacts are expected on Growling Grass Frog or Corangamite Water Skink from the construction, maintenance and operation of the

proposed wind farm and the DWF will not have a significant impact on the Growling Grass Frog or Corangamite Water Skink at or in the vicinity of the proposed wind farm site.

4.4. Golden Sun Moth

Areas of potential habitat identified in Figure 3 of the EMP will be retained and excluded for access by personnel and vehicles. Associated infrastructure will not be located within the potential habitat to avoid increases in sediment loads.

Golden Sun Moth habitat is to be identified with fencing and no-go signage.

4.5. Meteorological Masts Guy Lines

The wind farm layout has been adjusted to account for historical breeding and flocking records and associated activity of Brolgas. This together with a 300-meter disturbance buffer creates a turbine free buffer zone (Figure 3 of the EMP). As required under Condition 59, any meteorological mast guy wires occurring within the buffer zone must be marked to increase their visibility and decrease the chance of potential collision. This will be undertaken by the construction company installing the meteorological masts and supervised by the environmental representative of the wind farm construction company.

Appropriate marking of guy wires can include flags attached at appropriate intervals along the length of wires and reflective markers.

Implementation of this mitigation measure will adequately lower the risks posed to any Brolgas from guy wires and prevent any significant impacts on the species.

5. IMPLEMENTATION OF THE FAUNA MANAGEMENT PLAN

Table 2: Management actions and performance criteria

Phase	Objective	Timing and frequency	Management action	Performance measures, monitoring and review	Persons responsible
Pre-construction	Microsite construction areas away from potential habitat and native vegetation	Prior to works	Avoid construction in Striped Legless Lizard and Fat-tailed Dunnart habitat	Identified habitat avoided where possible during construction	Site Manager, Environmental Representative
			Apply a 55m to wetland and aquatic habitat. Buffered area to be fenced and signed as no-go areas when construction occurs within 100m of aquatic habitat	No construction to occur within the buffer	
			Identified Golden Sun Moth habitat excluded with fencing and no-go signage	No construction to occur within the Golden Sun Moth habitat	
	Protection of existing habitat and associated values	Prior to works	Machinery to enter and exit sites along defined routes	Machinery will not enter areas of native vegetation	Site Manager, Environmental Representative, Construction Personnel
			Machinery brought on site to be weed and pathogen free (see Biosecurity Management Plan)	Pathogens and weeds prevented from being introduced onto site	
			Machinery wash down, lay down and personnel rest areas located in disturbed areas	Machinery and rest areas will not disturb areas of native vegetation	
	Induction and training on species of concern for construction personnel	Prior to works	Briefing of staff regarding species of concern: Striped Legless Lizard, Fat-tailed Dunnart, Growling Grass Frog, Corangamite Water Skink and Golden Sun Moth	Staff adequately briefed on species identification, areas of potential occurrence, no go areas, emergency protocols and salvage and translocation protocols	suitably qualified ecologist

Phase	Objective	Timing and frequency	Management action	Performance measures, monitoring and review	Persons responsible
	Best practice sediment and erosion control	Prior to works	Sediment and contaminant traps installed for works occurring within 100m of aquatic habitat, where appropriate	Sediment prevented from accumulating in aquatic habitats	Site Manager, Environmental Representative, Construction Personnel
			sediment fences down slope of exposed soil and stockpiles		
			Minimisation of the area of disturbed soil at any one time		
			Maintenance and monitoring of sediment and erosion control measures monthly		
Construction	Prevent species of concern entering construction footprint	Prior to works	Temporary drift fencing to be installed beside road ways and tracks when in regular use for construction in the vicinity of aquatic habitat	No Growling Grass Frog mortalities on roads	Environmental Representative
			Any excavations that are left open overnight inspected the next morning	Excavation monitored daily for native fauna	
		During works	Implement emergency protocol (section 5.3) in the event species of concern are detected in construction footprint	No species of concern individual mortalities	Environmental Representative/ Fauna specialist
	Implementation of salvage and translocation protocol, if required	During disturbance of species of concern habitats	Licensed fauna recovery specialist to undertake protocol implementation	Suitably experience and qualified person	Fauna specialist
			Implement protocol in the event species are detected during habitat disturbance	No species individual mortalities	Fauna specialist
	Weed control	During works	Weed control	Weeds are prevented from establishing in disturbed areas of construction	Environmental Representative

Phase	Objective	Timing and frequency	Management action	Performance measures, monitoring and review	Persons responsible
Post-construction	Reestablishment of habitats/native vegetation	Post-construction	Revegetation of disturbed habitat where no permanent infrastructure exists	Habitat restored to appropriate condition see Vegetation Management Plan	Environmental Representative
	Brolga mitigation measures	Post-construction	Mark Met Mast guy wires inside turbine free buffer zone	No significant impacts on Brolgas through collisions with guy wires.	Environmental Representative

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6. REFERENCES

- Brett Lane & Associates (BL&A) 2015, *Dundonnell Wind Farm – Flora and Fauna Assessment*, consultant report prepared for Trustpower Australia Pty Ltd.
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- Murray, K., Skerratt, L., Marantelli, G., Berger, L., Hunter, D., Mahony, M. and Hines, H. 2011. Hygiene protocols for the control of diseases in Australian frogs. A report for the Australian Government Department of Sustainability, Environment, Water, Population and Communities.
- Trustpower 2015, Dundonnell Wind Farm EES, Chapter 25 – Environmental Management Framework, Melbourne, June 2015.

Appendix 1: Striped-legless Lizard and Fat-tailed Dunnart salvage and relocation protocol

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**DUNDONNELL WIND FARM
STRIPED LEGLESS LIZARD AND
FAT-TAILED DUNNART
SALVAGE AND RELOCATION PROTOCOL**

**Dundonnell Wind Farm Pty Ltd
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Revision History

Revision	Description	Date	Prepared By	Approved By
11.0	Initial draft provided to Tilt Renewables and Zenviron for comment	8/5/2018	T Lay	I Kulik
11.1	Revised draft incorporating comments from Tilt Renewables and Zenviron	04/06/2018	E Ebsworth	I Kulik
11.2	Revised draft incorporating comments from Tilt Renewables and Zenviron	21/06/2018	I Kulik	-
11.3	Revision incorporating comments from DELWP	25/09/2018	I Kulik	-

1. INTRODUCTION

This Salvage and Relocation Protocol (SRP) for Striped Legless Lizard (SLL) and Fat-tailed Dunnart (FTD) has been prepared by Brett Lane and Associates Pty. Ltd (BL&A) for Zenviron Pty Ltd, on behalf of Dundonnell Wind Farm Pty Ltd, in relation to the Dundonnell Wind Farm (DDWF).

The Dundonnell Wind Farm was approved by the Minister for Planning in July 2016 under Planning Permit 2015/23858 (the Planning Permit), issued 23 October 2016.

This STP has been prepared in accordance with of Condition 59c of the Planning Permit and Condition 8 of the EPBC Act approval decision notice (EPBC 2012/6557) and is generally in accordance with Chapter 25 of the Dundonnell Wind Farm EES (June 2015). The objective of this protocol is to avoid and reduce impacts to SLL and FTD during construction.

Condition 59c of the Planning Permit requires the following:

Prior to commencement of construction, a fauna management plan must be prepared in consultation with DELWP and the responsible authority to the satisfaction of DELWP - Environment Portfolio and the responsible authority. When approved, the fauna management plan will be endorsed and will then form part of the permit. The fauna management plan must include:

- c) *Salvage and translocation protocol for the Striped Legless Lizard and Fat-tailed Dunnart.*

Condition 8 of approval which relate to Striped Legless Lizard in the EPBC Act approval decision notice (EPBC 2012/6557) requires the following:

The approval holder must comply with planning permit conditions where they relate to monitoring, managing, mitigating, avoiding, offsetting, recording, or reporting on impacts to protected matters.

The definition of *protected matters* in the approval notice includes Striped Legless Lizard.

Salvage and translocation/relocation of fauna species aims to avoid and reduce impacts to fauna during construction. The protocol aims to provide guidance on measures to reduce impacts to SLLs and FTDs. Negative impacts to areas of native vegetation were minimised by micro-siting turbines and associated structures away from these, where possible. An area of 0.817 hectares of native vegetation has been approved for removal at the wind farm site and major site access track and will affect SLL and FTD habitat.

This report is divided into the following sections.

Section 2 outlines existing project information.

Section 3 describes the habitat requirements and ecology of the Striped Legless Lizard and Fat-tailed Dunnart.

Section 4 outlines the salvage requirements.

Section 5 presents the control measures for reducing species impact.

Section 6 describes the salvage and relocation protocol.

This report was undertaken by a team from Brett Lane & Associates Pty Ltd including; Teisha Lay (Zoologist) and Inga Kulik (Senior Ecologist and Project Manager).

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2. PROJECT DESCRIPTION

2.1. Wind farm site

The DDWF is located in Western Victoria, 23 kilometres north-east of Mortlake and 21 kilometres west of Derrinallum (Figure 1 of the EMP). The site comprises an approximate area of 4,200 hectares, with a 220-hectare project footprint across 11 farming properties. The site is within the Moyne Shire.

The wind farm site lies between private landholdings to the north, east and west, and the Woorndoo-Dundonnell Road to the south. The wind farm site includes the roadsides of Ennerdale Lane, Fashams Lane, Dohertys Lane, Post Office Lane and Dawes Lane.

Existing infrastructure at the site and on the surrounding land is predominately agricultural in nature and includes isolated dwellings, sheds, access tracks and fencing.

The majority of the wind farm site is unimproved pasture used for livestock grazing, with some areas of cleared land for improved pasture. Land use surrounding the wind farm site includes grazing and cropping.

The wind farm site comprises a series of volcanic flows which have formed a mosaic of basalt ridges (barriers). The majority of the wind farm site is dominated by pasture grass and agricultural and environmental weeds. Native vegetation is limited to small scattered patches of shallow grassy wetland, escarpment shrubland, plains grassland and scattered River Red Gum trees.

The land to the west of the wind farm has been subject to more intense agricultural activities. Here also, improved pasture and typical introduced agricultural and environmental weeds, as well as extensive cropping, dominate the landscape.

2.2. Project components

The Project will consist of the following components, as shown in Figure 1 of the Environmental Management Plan for this site:

- Eighty wind turbines, including base construction area and adjacent construction pads;
- Turbine access tracks within the wind farm site including a network of underground 33 kV distribution cables that connect to the onsite substation;
- The major site entrance access track, which runs from Woorndoo-Streatham Road to the wind farm site;
- The equipment lay-down areas and site office in the western part of the site;
- Temporary concrete batching plant;
- Two proposed on-site quarry sites; and
- On-site electrical substation.

The wind farm will be connected to the National Electricity Market via a 38km 220kV transmission line, and offsite substation, to the Mortlake Power Substation (MOPS). This infrastructure has been approved under a separate Moyne Planning Permit (PL15/075) and will be subject to a separate Environmental Management Plan.

The Mt Fyans Wildlife Reserve, located in the centre of the wind farm site, is excluded from any wind farm related development and will not support any wind farm infrastructure.

2.3. Fauna habitat within DDWF

The wind farm site supported seven habitat types, which are described below:

- Agricultural land
- Scattered and planted trees
- Native Eucalypt Plantation
- Native grassland
- Rocky outcrops
- Stony knoll shrubland
- Aquatic habitat

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Agricultural Land

The majority of the wind farm site comprises agricultural land. The ground layer and soil profile of this habitat type was highly modified as a result of historical and present agricultural activity. Grazed paddocks supported a mixture of indigenous and non-indigenous flora species including weed species. The paddocks were generally treeless apart from planted shelter belts along fence lines. This habitat type generally lacked structural diversity and provided few opportunities for fauna. Rocks had been removed in cultivated areas and as a result, numerous piles of rocks occurred throughout the wind farm site. These artificial rock piles offered shelter and basking sites for small mammals and an array of reptiles, as well as perching sites for birds. The crevices and cracks between rocks provide protective cover for reptiles. This habitat has been assessed as being of low quality for fauna due to its extensive modification and the removal of most habitat elements. SLL and FTD are unlikely to occur here, except for artificial rock piles.

Scattered and Planted Trees, Native Eucalypt Plantation

A small number of scattered trees were situated among grazed and cropped land, mostly River Red-gum (*Eucalyptus camaldulensis*). Mount Fyans Wildlife Reserve is situated in the centre of the wind farm site, but is excluded from the turbine area, and supports an area of native woodland dominated by *Acacia* and *Eucalyptus* species, mostly Blue Gum (*Eucalyptus bicostata*). These areas do not provide suitable habitat for the SLL and FTD.

Native Grassland

In some paddocks and along the major access track From Woorndoo-Streatham Road to the wind farm site, small patches of native grassland (mostly as mosaic with other vegetation types) were interspersed among rocky outcrops. This habitat supported a mixture of indigenous and introduced grassland flora and provided foraging opportunities for a number of generalist grassland fauna species. Whilst this habitat is surrounded by intensive grazing and cropping paddocks, connectivity to similar habitats within the landscape, provided by intact roadside vegetation, increased the value of this grassland to fauna. Overall, the native grassland habitat of the wind farm site was considered to be moderate quality habitat for fauna since it retained many original elements, such as ground layer diversity and structure, and dispersal corridors to similar habitats. These patches could provide habitat for the SLL and FTD.

Rocky Outcrops

Scattered emergent basaltic rocks occur throughout much of the wind farm site. Rocky outcrops are a common feature in the Victorian Volcanic Plain bioregion. This habitat was

formed by former lava flows and surface rocks have formed as a result. Indigenous grass species, including wallaby-grasses, spear-grasses and Kangaroo Grass (*Themeda triandra*), have a low to moderate cover within these outcrops but ground cover across most of these areas is dominated by introduced grasses and pasture weeds. The rocky outcrops are heavily grazed by sheep and only provide scattered native grass plants in a matrix of introduced pasture species. Inter-tussock spacing is negligible. SLL and FTD are unlikely to occur here, except for areas with surface rocks or deep cracks in the soil that can offer opportunities for sheltering and foraging.

Stony Knoll Shrubland

This habitat constituted a small proportion of the wind farm site and occurred in the central and north-western section of the wind farm site. Stony knoll shrubland was characterised by a moderate density of emergent and loose surface rock and a range of stunted native shrubs such as Tree Violet. The rocky terrain supported substantial cracks and crevices that provided shelter for small ground-dwelling reptiles and mammals. Stunted trees and shrubs in these areas were also likely to provide a source of food and shelter for birds. This habitat was well connected with contiguous areas of rocky outcrop in the landscape, increasing the value of this habitat to fauna.

Aquatic Habitat

Aquatic habitats were very limited in extent within the wind farm boundary including wetlands, floodplains and farm dams. This habitat is unsuitable for SLL and FTD.

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2.4. Previous surveys

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2.4.1. Striped Legless Lizard

Existing Information

The VBA shows nine recent records of SLL at four locations within 10 kilometres of the wind farm site, the most recent at each site dated 2005 to 2007. These records were located from rail or road reserves.

Native grassland and Stony Knoll Shrubland habitat which may support the species is illustrated in Figure 3 of the EMP.

Targeted Surveys

In the initial targeted survey during 2010, the overall survey effort (150 tiles within the proposed wind farm site checked six times over the survey period) was 900 tile checks. During the second targeted survey in 2013, the overall survey effort was 3000 tile checks (50 x 10 tile grids checked six times). An overall survey effort of 3900 tile checks was considered sufficient to detect significant populations of SLL in the wind farm site (see BL&A 2015). Tile grid locations are presented in Figure 3 of the EMP.

SLLs were not detected during the surveys in the wind farm site. A Common Blue-tongue Lizard was observed incidentally while traversing between tile grids.

2.4.2. Fat-tailed Dunnart

Existing Information

The VBA holds 14 recent records of Fat-tailed Dunnart at three locations within 10 kilometres of the wind farm site, the most recent at each site dated 2007 and 2008.

Survey Results

The overall survey effort of 3900 tiles checked (900 tiles checked during the 2010 survey and 3000 tile checks in the survey during 2013) was considered sufficient to detect significant populations of FTD in the wind farm site.

One FTD was recorded on one occasion in 2010 in one of the grids outside of the wind farm site (see BL&A 2015). Evidence of scats and nests were also present at this site. In addition, one FTD was detected under a tile within the wind farm site during the 2013 surveys (Table 1).

Table 1: Results of tile grid survey

Visit Number	Date	Grid Number	Time	T below (°C)	H below (%)	Species
5 th visit 2010	24/11/2010	3 (outside wind farm site)	6:40	18.9	High	Fat-tailed Dunnart
6 th visit 2013	21/11/2013	1	13:15	21.6	64	Fat-tailed Dunnart

Notes: T below (°C) = Temperature under tile; H below (%) = Humidity under tile; High = Humidity over 90%.

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3. SPECIES' BIOLOGY

3.1. Striped Legless Lizard

Description

The Striped Legless Lizard (*Delma impar*) is a member of the family Pygopodidae, the legless or flap footed lizards (Cogger 2000). The key distinguishing features of this species include:

- Visible ear openings;
- A rounded tongue; and
- Presence of scaly hind limb flaps.

While it shows considerable variation in colour and pattern, this species of legless lizard is usually pale grey-brown above and cream on the ventral surface, with a series of longitudinal dark brown or black stripes along the length of the body that breaks into rows of spots on tail (Cogger 2000). It is slightly thicker than a pencil and grows up to approximately 30 centimetres in length (Webster *et al.* 1992).



Figure 1: Striped Legless Lizard (Teisha Sloane 2013, not at Dundonnell)

Habitat and distribution

The SLL inhabits dense native grasslands, often with rocky rises, that were once extensive on the volcanic plains west of Melbourne (Webster *et al.* 1992). It utilises rocks, soil cracks, burrows and grass tussocks for sheltering (Smith and Robertson 1999). Work on the species has found that it can also occur in grasslands dominated by introduced species, in secondary grasslands (Dorrough and Ash 1999, Koehler 2004, O'Shea 2004) and in habitats where rocks are absent but deep cracking clay soil is present (Coulson 1990).

In view of the presence of potentially suitable habitat in areas of remnant native grassland and shrubland, it was concluded that there was potential for this species to occur within the proposed wind farm site. Accordingly, a targeted survey program was instigated. The methods and results of this survey program are presented in this section

The species is primarily found in Victoria, with some populations being present in eastern South Australia and southern New South Wales (Figure 2).

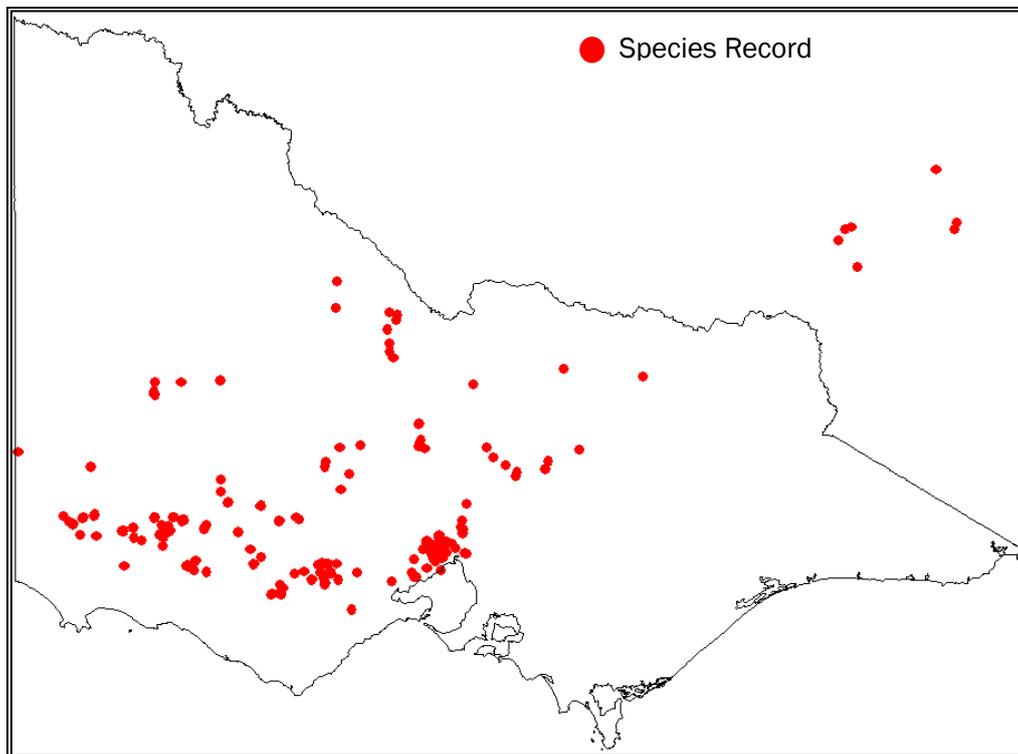


Figure 2: Distribution of Striped Legless Lizard in Victoria (Source: Viridians 2011)

Threats

The main threats to the species are habitat loss, degradation and fragmentation. In particular agricultural practices have resulted in a significant population decline and in some cases, local extinctions (Coulson 1990).

Legislative protection

The SLL is considered to be vulnerable nationally under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). It is listed as a threatened taxon on Schedule 2 of the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act). It is considered to be endangered in Victoria (DSE 2013).

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3.2. Fat-tailed Dunnart

Description

The Fat-tailed Dunnart (*Sminthopsis crassicaudata*) is a widespread mouse-sized marsupial. Its fur is fawn-grey to sandy-brown above and white below. It has a pointed muzzle, large bulging eyes, large ears and a short, thick tail (Cronin 2008) which stores fat as a short-term energy reserve during periods of food shortage (Menkhorst 1995). This species is nocturnal and feeds primarily on invertebrates (Morton 1978).



Figure 3: Fat-tailed Dunnart (BL&A picture, not from Dundonnell)

Habitat

The FTD occurs in a great range of habitats including moist coastal to inland arid areas with open woodlands, low open shrubland, sparse tussock grasslands, gibber plains and farmland, with a significant component of bare ground (Menkhorst 1995). They take shelter against cold, heat and predators under rocks, stumps, logs or within deep cracks in the soil (Menkhorst 1995). They also use cavities beneath rocks or logs as nesting sites.

Distribution

The FTDs range is widespread across over much of the southern two thirds of the Australian mainland (Figure 4). In Victoria, the eastern limit of its distribution corresponds to the Hume Highway. It is more common in central and western Victoria and mainly inhabits farmland (Menkhorst 1995). The species inhabits only lowland areas in the western half of Victoria.

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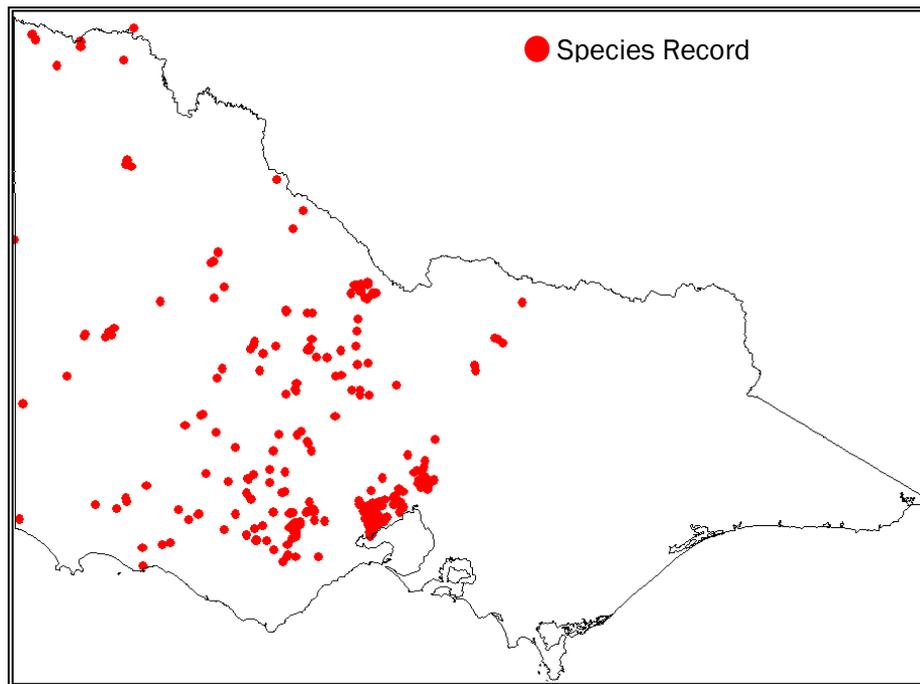


Figure 4: Distribution of Fat-tailed Dunnart in Victoria (Source: Viridians 2011)

Threats

FTDs are in threat from introduced predators such as cats and degradation of their natural habitat.

Legislative protection

The FTD is considered as *Lower Risk - Near Threatened* on the DELWP threatened species advisory list (DSE 2013).

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4. SALVAGE REQUIREMENTS

Salvage and translocation of SLL is currently suspended in Victoria pending the outcome of a departmental review of the technique. Previously, salvage was undertaken in accordance with the Operational Plan prepared by the Department of Environment and Sustainability (DSE, 2011), now the Department of Environment, Land, Water and Planning (DELWP), which described the procedure to determine priority areas for SLL and outlined a protocol for the salvage.

The development footprint of the wind farm is not expected to have significant impacts on SLL and FTD habitat, as the majority of the development is linear (tracks) and intersects with small areas of suitable habitat. Less than one hectare of native vegetation and suitable habitat is approved for removal at the wind farm site and along the site access track (see Figure 3 of the EMP). Therefore, it is considered reasonable to relocate animals to adjacent suitable habitat out of the impact zone rather than translocate species to a designated release site away from the site.

This salvage protocol will operate under Victorian (*Wildlife Act 1975*) and Commonwealth (*Environment Protection and Biodiversity Conservation Act 1999*) permits relating to the salvage of SLLs. These specify reporting requirements that will be complied with.

Where animal handling is required, it must be done under licence under the *Wildlife Act 1975*. A licence for any fauna salvage work would be required from DELWP under this Act and will be applied.

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5. CONTROL MEASURES

This section summarises pre-construction and construction phase control measures designed to prevent or mitigate the impacts on the SLL and FTD if detected and on their habitat.

5.1. Pre-construction phase

This section provides an outline of the control measures required to be implemented prior to the commencement of the proposed works.

5.1.1. Training of construction personnel

A requirement of the planning permit is that construction personnel are trained in the recognition of the SLL and FTD prior to commencement of all construction works. The purpose of this is to assist construction personnel to identify and report the occurrence of this species at the commencement of any earthworks, in order that the salvage protocol in section 6 can be implemented immediately in the event that the species is detected.

The following actions will therefore be implemented:

- A compulsory induction presentation will be made to personnel involved in construction to:
 - Inform staff of the relevant planning permit conditions and of the legal obligations of the construction contractor (on behalf of the developer);
 - Train staff in identification of the SLL and FTD (see brochures in Appendices 2 and 3);
 - Inform staff of the existence of and general measures in the salvage protocol; and
 - Inform staff of reporting procedures, responsible personnel and lines of communication in an event of the species' being detected.

Information brochures have been prepared on this species for distribution to all site personnel providing a physical description of the species, their population distribution, habitat and similar species. In addition, the salvage protocol and contact details for relevant organisations are also summarised (see Appendices 2 and 3).

5.2. Construction phase

This section describes the procedures to be adopted during construction to reduce risks to any on-site population of the SLL and FTD detected during construction.

5.2.1. Detection procedure

The following procedure will apply if any SLL or FTD individuals (dead or alive) are discovered or sightings of SLL or FTD are made at the commencement of or during construction in areas of potential habitat (see Figure 3 of the EMP) or elsewhere on the site:

- Construction works must be halted immediately;
- Construction personnel are to notify the person responsible immediately for environmental compliance within the project, who must be familiar with the salvage protocol; and

- The salvage protocol described in section 6 must be implemented before construction works can re-commence in the specific patch of potential habitat or in the identified locality.

The procedure is designed to minimise direct impacts on ground-dwelling fauna and to verify any additional habitat patches for future reference.

5.2.2. Open Trench Procedure

During construction, the procedure described below will apply where pits for turbine structures or trenching for underground power cables, are left open overnight or longer.

- Pits and trenches left open overnight will have a low fence constructed around them or will be boarded over temporarily to prevent access by ground-dwelling fauna.
- The morning before works commence, each open pit/trench will be inspected to ensure that no trapped fauna remains in the pit/trench.
- All collected fauna will be salvaged and relocated to habitats as set out in the salvage protocols in Section 6.

5.2.3. Habitat management measures

Management activities designed to reduce the direct and indirect effects of construction activities on fauna habitats in the area are described below. These measures will apply to the areas mapped in Figure 3 of the EMP, and all areas of surface rock.

- In suitable FTD habitats affected by construction, surface rocks and/or logs will be replaced after construction works where disturbed areas are not covered permanently by infrastructure.
- Best practice weed, erosion and sediment control by an experienced practitioner, will be carried out along disturbed areas after construction to control any weed outbreaks associated with construction. Control targets and measures are described in the Vegetation Management Plan.

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6. SALVAGE AND RELOCATION PROCOTOL

6.1. Striped Legless Lizard

The salvage operation is to be performed in areas of mapped native grassland and stony knoll habitat that are approved for removal by the responsible authority (see Figure 3 of the EMP). This protocol has been developed as a precautionary measure due to this species being cryptic and suitable habitat being present on the site.

A qualified zoologist listed on the permit with relevant herpetological expertise will undertake the salvage operation. Any other person to assist in salvage works will work under the close supervision of the individuals listed on the permit.

The following procedures will be implemented if SLL are found during salvage:

- Document details for each individual SLL salvaged including location (using GPS, accurate to within +/- 5 metres), on the collection record data sheet provided in Appendix 1.
- Any SLL caught during salvage are to be held individually in securely tied calico bags. Cloth bags will be used with seams on the outside to avoid entanglement of SLL in loose threads.
- Captured SLL will be released immediately, in nearby habitat that will not be impacted by the proposed works. This includes dense vegetation, under rocks or under woody debris. Care will be taken to minimise disturbance of habitat features to prevent impacting other SLL which may be within the area.
- All animals found during construction are to be relocated away from the impact zone at a minimum distance of 30m and safely moved to nearby suitable habitat within 100m of the initial point of capture.
- The precise location to which SLL would be relocated will depend on the availability, size and condition of the habitat. Ideally it will be as close as possible to where the animal originated and preferably within the same linking patch of habitat.
- During salvage works, any incidentally captured fauna such as other reptile species, frogs or mammals, will also be removed from harm.
- Should any SLL be found within the works zone, construction will be halted temporarily within a 30m buffer area around the affected area and DELWP will be notified within 24 hours.
- Once relocation is complete, works may re-commence.

If injured or dead animals are detected during the salvage operation, then the following must be adopted;

- Ex expeditiously deliver any obviously injured SLL to the nearest veterinarian clinic for treatment. The animal is to be kept in sheltered, warm and quiet conditions, preferably within the construction site offices. During transportation, the esky housing the animal is to be secured within the vehicle (e.g. wedged between the front and back seat or tightly strapped to a seat) with minimal noise.
- On-site euthanasia may be appropriate on welfare grounds in circumstances where animals have sustained obviously severe abdominal or head injuries that are preventing normal movement and righting reflex, or organs are exposed and there is obvious bleeding. In-field euthanasia will be carried out by a sudden crushing blow to

the head and decapitation. Note that tail loss (autotomy) as a natural anti-predator mechanism may occur and does not constitute injury.

- Retain preserved specimen of whole or any part of SLL recovered dead, including autotomised tails, and offer them to Museums Victoria along with adequate labelling and collection information (see Appendix 1).

The relocation of animals is subject to the reporting requirements of a Management Authorisation issued under the Wildlife Act 1975. The operations supervisor will report activities to the DELWP in a manner and timeframe specified by the *Wildlife Act 1975* licence requirements. The report will include:

- Area of potential habitat salvaged;
- Number of individuals found;
- Number relocated;
- Relocation sites; and
- Number of dead specimens.
- Records of non-target species are to be kept (location, species, number of individuals etc.) and forwarded to DELWP.

This salvage protocol operates under Victorian and Commonwealth permits relating to the salvage of SLL. The removal or relocation of other native fauna species not covered under these permits will need to be considered separately.

6.2. Fat-tailed Dunnart

The salvage operation would only need to be performed in areas of stony knoll shrubland, that are approved for removal by the responsible authority (see Figure 3 of the EMP) and other areas within the site and along the access track which support surface rocks, deep cracks in the soil or logs.

In addition to the salvage protocol for the SLL, a protocol has been developed for the handling and relocation of the FTD. The following procedures need to be followed:

- Capture any FTD. Minimise stress by placing a towel or blanket over the animal, then gently place in a well-ventilated box or calico bag.
- Captured FTD will be released immediately, in nearby habitat that will not be impacted by the proposed works. FTD will be released under rocks or under woody debris. Care will be taken to minimise disturbance of habitat features to prevent impacting other FTD within the area.
- The precise location to which FTD would be relocated will depend on the availability, condition of the habitat. Ideally it will be as close as possible to where the animal originated and preferably within the same linking patch of habitat.
- All animals found during construction are to be relocated away from the impact zone at a minimum distance of 30m and safely moved to nearby suitable habitat within 100m of the initial point of capture.
- Complete data collection sheet in Appendix 1 (location, habitat etc.) of FTD found.
- During salvage works, any incidentally captured fauna such as other reptile species, frogs or mammals, will also be removed from harm.

If injured or dead animals are detected during the salvage operation, then the following must be adopted;

- Ex expeditiously deliver any obviously injured FTD to the nearest veterinarian clinic for treatment. The animal is to be kept in sheltered, warm and quiet conditions, preferably within the construction site offices. During transportation, the esky housing the animal is to be secured within the vehicle (e.g. wedged between the front and back seat or tightly strapped to a seat) with minimal noise.
- On-site euthanasia may be appropriate on welfare grounds in circumstances where animals have sustained obviously severe abdominal or head injuries that are preventing normal movement and righting reflex, or organs are exposed and there is obvious bleeding. In-field euthanasia will be carried out by a sudden crushing blow to the head and decapitation.
- Any dead FTD will be offered to Museums Victoria with adequate labelling and collection information (see Appendix 1).

The relocation of animals is subject to the reporting requirements of a Management Authorisation issued under the Wildlife Act 1975. The operations supervisor will report activities to the DELWP in a manner and timeframe specified by the *Wildlife Act 1975* licence requirements. The report will include:

- Area of potential habitat salvaged;
- Number of individuals found;
- Number relocated;
- Relocation sites; and
- Number of dead specimens.
- Records of non-target species are to be kept (location, species, number of individuals etc.) and forwarded to DELWP.

Note: This protocol needs to be approved by the Department of Environment, Land Water and Planning (DELWP) before it is implemented.

6.3. Responsibilities

Overall supervision of the salvage operation will be the responsibility of Dundonnell Wind Farm Pty Ltd.

A qualified zoologist will apply for a Management Authorisation under the *Wildlife Act 1975* to undertake salvage of SLL and FTD at Dundonnell Wind Farm. The details, including number and date, of this permit will be forwarded to DELWP (advised delegate) before the salvage operation commences.

A qualified zoologist will provide the following for management of the salvage operation:

- Notify DELWP of the impending SLL and FTD salvage operation prior to commencement of construction.
- Notify DELWP immediately in the event that any other threatened species is encountered during salvage operations.
- If SLL are found during salvage, zoologists listed on the permit with relevant herpetological expertise will undertake the salvage.

- The relocation of animals is subject to the reporting requirements of a Management Authorisation issued under the Wildlife Act 1975. The operations supervisor will report activities to the DELWP in a manner and timeframe specified by the *Wildlife Act 1975* requirements.

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Appendix 1: Collection data sheet

DUNDONNELL WIND FARM – SALVAGE PROTOCOL: COLLECTION DATA SHEET		
Please fill out all details for individual salvaged. All details below the line are required if a Striped Legless Lizard or Fat-tailed Dunnart.		
Collector:	Date:	Time:
Site / property name:		Locality description:
GPS co-ordinates:	Weather conditions:	
Habitat description:		
Species salvaged:	Please circle: alive / injured / dead / autotomised tail only / euthanised on site	
If injured, details of Veterinarian Clinic transported to:		
Re-location site locality description:		
Distance (m) from initial point of capture:	GPS co-ordinates:	
Describe re-location of animal (<i>i.e. placed under rock in adjacent grassland 40 m away</i>):		
Photograph number (<i>if taken</i>):		
Other Notes:		<p>APPROVED FOR THE MINISTER FOR PLANNING</p> <p>SHEET 279 OF 301</p>

Appendix 2: Striped Legless Lizard information sheet

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Appendix 3: Fat-tailed Dunnart information sheet

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Appendix K Management Form Templates

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Incident Notification Form

This form is to be completed in the event that access to a digital incident reporting system is not possible, to ensure that initial notification of the incident is recorded and appropriate measures have been identified.

The completed form is forwarded to relevant site personnel.

INCIDENT REPORT DETAILS			
Reported date:		Reported time:	
Reported by:		Incident no.:	EVT-
INCIDENT DETAILS			
Incident date:		Incident time:	
Site / Department:		Client reference:	
Location details			
Incident title:			
Brief description:			
IMMEDIATE ACTIONS TAKEN			
Due date	Action	Hierarchy of control	Action open/closed
HIERARCHY OF CONTROL: Above the line: Elimination; Substitution; Engineering Below the line: Administration; PPE			
INCIDENT TYPE			
<input type="checkbox"/> Injury or illness <input type="checkbox"/> Environmental damage or loss <input type="checkbox"/> Asset / Equipment damage or loss <input type="checkbox"/> Near hit (injury or environment)		Was this an electrical incident? <input type="checkbox"/> Yes or <input type="checkbox"/> No	
SUPERVISOR DETAILS			
Supervised by:	<input type="checkbox"/> Company or <input type="checkbox"/> Other	Supervisor name:	



Environmental Inspection Form

Site/Project: _____

Location of Inspection: _____

Conducted By: _____

Date Inspected: _____

Inspection Purpose: Routine

Approval Condition

Results

ASPECT	ASPECT SCORE (%)
1. Hazardous Chemicals	
2. Fire Management	
3. Re-fuelling / Servicing Management	
4. Waste Management	
5. Water Management (including Erosion and Sediment Controls)	
6. Soil Management (including Acid Sulphate Soil)	
7. Fauna and Flora Management	
8. Heritage	
9. Community Engagement	
10. Emissions and Greenhouse Gases Management	
OVERALL INSPECTION TOTAL (Average % Score = Add % scores together / 10 = average %)	

General Comments

NOTE: Record and track all identified actions from this inspection in the site Action Register

Hazardous Chemicals

Hazardous Chemicals		NA/Y/N	Required Action
1.	Hazardous Chemicals Register is current and up-to-date		
2.	Hazardous chemicals are stored and segregated appropriately (i.e. incompatible substances separated)		
3.	Liquids, fuels / oils stored are placed in bunded areas (or on spill pallets)		
4.	Bunds are free of cracks and spills		
5.	All containers are in sound condition		
6.	All containers (including those containing waste) are clearly labelled		
7.	SDSs are readily available for all materials and within 5 years of issued date		
8.	Spill kits are readily available and adequately stocked		
A - Total Number of Applicable Items			Score = B/A x 100%
B - Total Number of Applicable Items Marked YES			= x 100 = %
Comments			

Fire Management

Fire Management		NA/Y/N	Required Action
1.	Fire extinguishing equipment (i.e. extinguishers, fire-fighting trailer) is easily accessible and regularly maintained (i.e. every 6 months)		
2.	The type of fire extinguishers available are suitable and appropriate for the types of hazards associated with the task / area		
3.	All flammable substances are stored away from any ignition source		
6.	Smoking areas designated and butts are appropriately disposed of (e.g. fireproof receptacles)		
7.	Vehicles / mobile plant with hot exhausts parked away from dry vegetation / grass		
8.	Where present, windrows and fire breaks checked for excessive leaf litter and new plant growth in accordance with local legislation		
9.	Hot works permit in place and followed		
A - Total Number of Applicable Items			Score = B/A x 100%
B - Total Number of Applicable Items Marked YES			= x 100 = %
Comments			

Re-fuelling / Servicing Management

Re-fuelling / Servicing Management		NA/Y/N	Required Action
1.	Transfer stations have adequate bunding and drainage		
2.	Onsite refueling of vehicles is completed at least 100m away from the nearest waterway / drainage		
3.	Drip trays are available and in use during re-fueling		
4.	Service vehicles have appropriate sized and fully stocked spill kits		
5.	Machinery is well maintained (i.e. no leaks, excessive emissions or noise)		
6.	No un-authorized servicing being undertaken on site		
A - Total Number of Applicable Items			Score = B/A x 100%
B - Total Number of Applicable Items Marked YES			= x 100 = %
Comments			

Waste Management

Waste Management		NA/Y/N	Required Action
1.	Adequate waste containers available for each type of waste (i.e. general waste, and recyclables containers either co-mingled or separated), containers in sound condition and enclosed / bunded to prevent pollution of surrounding environment		
2.	Waste containers are easily identifiable and labelled		
3.	Waste is adequately segregated with no cross contamination (i.e. recyclable, disposal, hazardous)		
4.	Bins are emptied regularly (e.g. No evidence of bins overflowing, no wind-blown litter, site is tidy)		
5.	Wastewater and sewage is being contained, and collected and removed by a licensed Contractor		
6.	Oily wastes are disposed of correctly in bins and away from ignition sources		
7.	Concrete washouts occurring in designated areas / pits (e.g. geofabric lined bund)		
8.	All concrete washout / waste disposed of appropriately		
9.	Vehicle wash down occurs in designated bunded and lined areas with water / vegetative matter captured for disposal		
A - Total Number of Applicable Items			Score = B/A x 100%
B - Total Number of Applicable Items Marked YES			= x 100 = %
Comments			

Water Management (including Erosion Sediment Control)

Water Management		NA/Y/N	Required Action
1.	No leaking taps, toilets, bunds or pipes		
2.	Taps, pipes and hoses are not left running		
3.	Water is extracted for construction use from approved sources		
4.	Potable water is readily available		
5.	Water present requiring discharge from site is compliant with discharge criteria		
6.	Erosion and sediment controls are installed and in good condition (i.e. not damaged)		
7.	Clean water is being diverted from disturbed areas		
8.	Water is not pooling on site as a result of works		
9.	Discharge pumps are set up with uptakes not sucking mud / sludge		
10.	Discharge points are protected from erosion		
11.	Tracking of material onto sealed roads is monitored and removed as required		
12.	Disturbed / exposed areas are stabilised and revegetated progressively		
A - Total Number of Applicable Items			Score = B/A x 100%
B - Total Number of Applicable Items Marked YES			= x 100 = %
Comments			

Soil Management (including Acid Sulphate Soils)

Soil Management		NA/Y/N	Required Action
1.	Topsoil (top 100mm) is removed and stockpiled before earthworks		
2.	Topsoil and vegetation stockpiles do not exceed 2m in height, and protected from erosion		
3.	Sub-soil stockpiles are separated from topsoil stockpiles		
4.	Weed infested topsoil is stored separate from 'clean' topsoil		
5.	Soil is not stockpiled within tree root protection zones		
6.	Where ASS has been identified the following apply:		
a.	ASS disturbance is tracked (e.g. on an ASS Register)		
b.	ASS treated with lime for use in backfilling is verified as neutral before re-using (i.e. approval given to reuse soils)		
c.	ASS stockpiles have lime guard layers underneath them		
d.	ASS Treatment Pad bunding, sump, and lime guard layer intact		

Soil Management		NA/Y/N	Required Action
e.	Lime stockpiled and available for ASS treatment		
f.	Stockpiled lime protected from rain		
g.	No acid leaching visible in stockpiles or excavation walls / floors (i.e. rust staining)		
h.	Excavation / trench where ASS material originated from is backfilled / stabilised using above procedures		
A - Total Number of Applicable Items			Score = B/A x 100%
B - Total Number of Applicable Items Marked YES			= x 100 = %
Comments			

Fauna and Flora Management

Fauna and Flora Management		NA/Y/N	Required Action
1.	Vehicle and personnel in approved work areas only.		
2.	Speed limits respected		
3.	An activity specific Excavation and Ground Disturbance Permit is available at the ground disturbance activity		
4.	Site / construction boundaries are clearly marked		
5.	Barricading and signage in place to identify any protected / restricted areas (e.g. tree protection zones, endangered habitat, weed area), and in good condition		
6.	Barricading / fencing in place to prevent fauna / stock entering work areas / trenches		
7.	Equipment is free from weeds / pests (i.e. Site inspection / approval process for mobile plant / equipment in place and complied with)		
8.	No biosecurity risk plants or animals (including insects) observed (e.g. weeds, fire ants, foxes)		
9.	No wildlife trapped in trenches or excavation pits		
10.	Means of escape (i.e. ramps) or shelter present in trenches / excavations for wildlife		
11.	Lighting is minimised / targeted at night		
A - Total Number of Applicable Items			Score = B/A x 100%
B - Total Number of Applicable Items Marked YES			= x 100 = %
Comments			

Heritage

Heritage		NA/Y/N	Required Action
1.	Heritage sites are sign posted and no-go zones in place		
2.	Heritage sites remain undisturbed during construction works (i.e. No evidence of impact)		
A - Total Number of Applicable Items			Score = B/A x 100%
B - Total Number of Applicable Items Marked YES			= x 100 = %
Comments			

Community Engagement

Community Engagement		NA/Y/N	Required Action
1.	Loads are covered before they leave site (i.e. soil or waste removal)		
2.	Where required, site signage has current contact information on it and is legible (e.g. no graffiti, hidden by materials)		
3.	Acoustic barriers are in good condition		
4.	Noise monitoring conducted as required and results within project parameters (i.e. quantitative measurements)		
5.	Out of hours works complies with project requirements		
A - Total Number of Applicable Items			Score = B/A x 100%
B - Total Number of Applicable Items Marked YES			= x 100 = %
Comments			

Emissions and Greenhouse Gases Management

Greenhouse Gases Management		NA/Y/N	Required Action
1.	Dust is contained to site limits and well controlled		
2.	Odours are controlled or prevented from escaping site		
3.	Air quality monitoring conducted as required and results within project parameters (i.e. visual inspection)		
4.	Equipment is well maintained (e.g. there is no visible black smoke from exhausts)		
5.	Plant and equipment is turned off when not in use (no unnecessary idling)		
6.	Lights are switched off when offices are not attended		
7.	Computers, monitors and printers are switched off when offices are not attended		
8.	Hydrocarbon use is recorded for the site		

Greenhouse Gases Management	NA/Y/N	Required Action
A - Total Number of Applicable Items		Score = B/A x 100%
B - Total Number of Applicable Items Marked YES		= x 100 = %
Comments		

Appendix L – Tilt Renewables Environment Policy



Environmental Policy

Purpose - This policy outlines how Tilt Renewables will achieve its commitments to managing its business in a legally compliant and environmentally responsible manner.

Scope – This policy covers all employees of Tilt Renewables Group.

Associated Documents –

Type	Document Title
Company Policy	Legal Compliance Policy
Others	Environment Protection and Biodiversity Conservation Act 1999 (AU) Resource Management Act 1991 (NZ) Environmental Protection Acts (AU & NZ)

Policy Statements – Tilt Renewables, including its Board and senior leadership team are committed to managing the environmental impacts of the business operations of the Group.

Tilt Renewables will:

1. comply with all relevant legal environmental obligations of the jurisdictions in which it operates including (but not limited to) environmental protection authorities, development, planning, and, environmental protection Acts and related legislation, and any related approval documents for each project;
2. ensure its activities do not lead to environmental pollution and minimise other environmental impacts of its activities;
3. assess environmental impacts and develop appropriate targets and environmental management programs;
4. look to continually improve its environmental performance by periodically reviewing its environmental policy, impacts and management systems;
5. communicate and promote environmental awareness and work with stakeholders to ensure positive environmental outcomes.

Signed:



Deion Campbell
Chief Executive

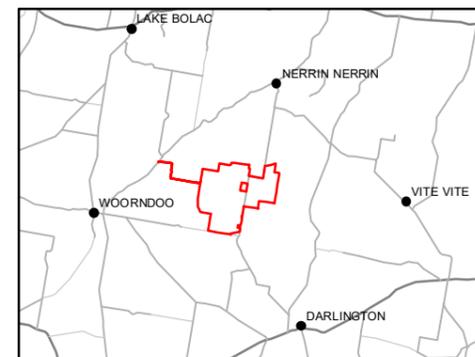
May 2018

File name: Environmental Policy	Authorised by: Chief Executive
Guideline No: N/A	Version: 2.0
Issue date: May 2018	Review date: May 2019
Department: HS	Guideline Steward: GM Generation & CFO and Company Secretary

Appendix M – Project Figures

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MINISTER FOR PLANNING**

SHEET 292 OF 301



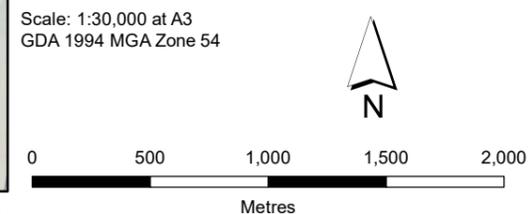
- Wind Farm Layout**
- Business Identification Signage
 - Firefighting Water Tank
 - Main Access Track
 - Public Road Upgrade Extent

**APPROVED FOR THE
MINISTER FOR PLANNING**

SHEET 293 OF 301

Date: 20/09/2018
Version: A

Data Sources:
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 Base data: VicMap (Copyright © The State of Victoria,
 Department of Environment, Land, Water & Planning 2017)

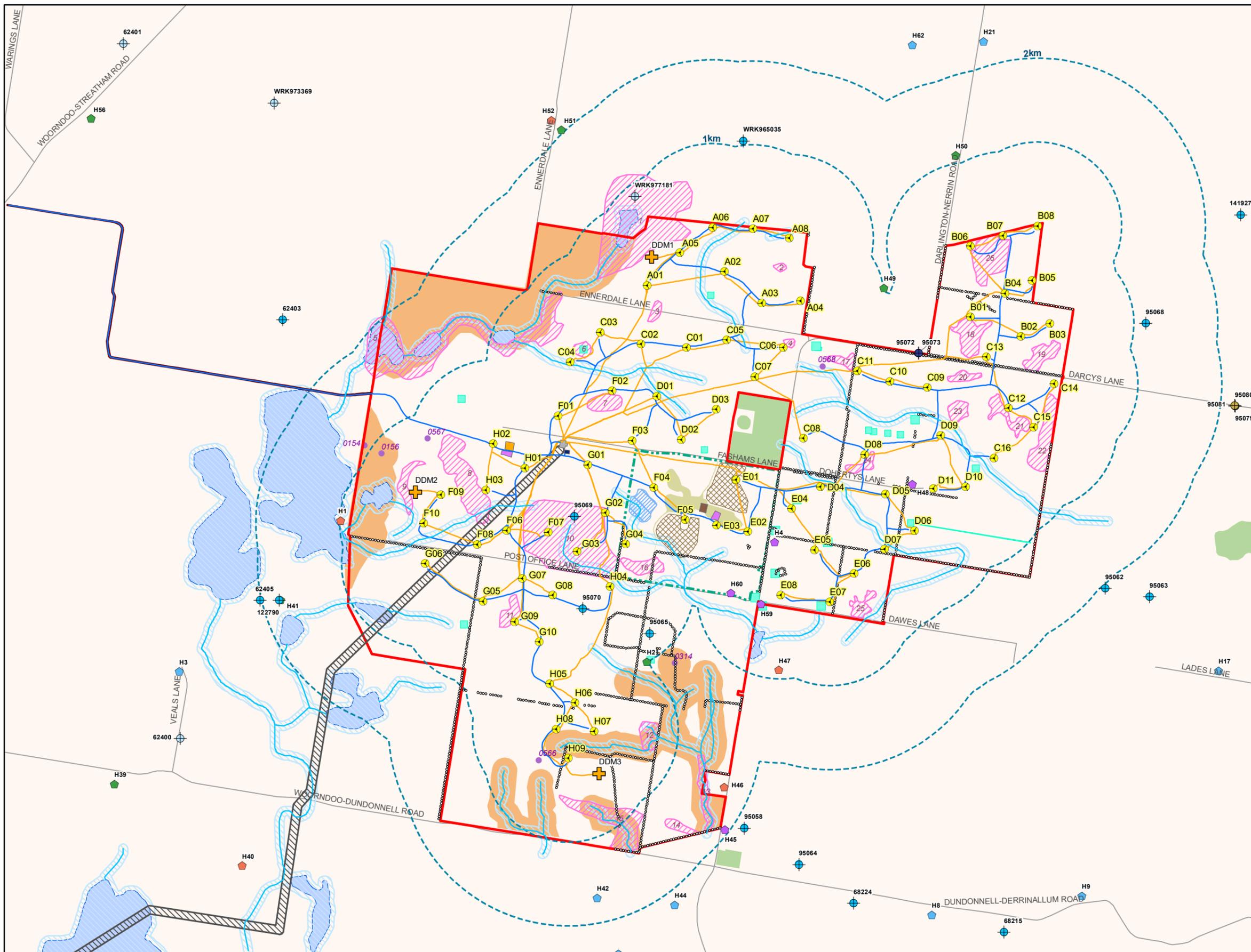


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Dundonnell Wind Farm

Appendix M - Figure 1: Public Road Upgrade Extent





- Wind Farm Layout**
- 80 Turbine Layout (As Built)
 - Permanent Met Masts
 - Access Tracks
 - Underground Cables
 - Distance Buffers (from 80 Turbine Layout)
 - Batch Plant
 - Operations and Maintenance Building
 - Substation
 - Temporary Construction Compound
 - Temporary Laydown Area
 - Main Access Track
 - Project Boundary
- Heritage Constraints**
- Areas of Geomorphological Sensitivity
 - Areas of Aboriginal Heritage Sensitivity
 - Historical Cultural Heritage Areas
 - Aboriginal Site (VAHR-XXXX)
 - Dry Stone Walls
- Other Constraints**
- Quarry WA1540
 - Quarry Access Track
 - Quarry Extent
 - Storage Dam
 - Designated Waterway
 - Designated Water Area
 - Designated Waterway and Water Area Buffers (55m)
 - Transmission Line Corridor
- Bores**
- Domestic/Stock
 - Groundwater Investigation
 - Observation
 - Unknown
- Dwellings (as at 21 April 2015)**
- Participating Host Landowner
 - Participating Neighbour
 - Specific Arrangement
 - Neighbour

Date: 03/08/2020

Version 1.0

PLANNING and ENVIRONMENT ACT
Moyness PLANNING SCHEME

PERMIT NO. 2015/23858/A
 Endorsed to comply with conditions 30, 40-50,
 59, 62

MODIFIED ENDORSED PLAN

Sheet 1 of 6

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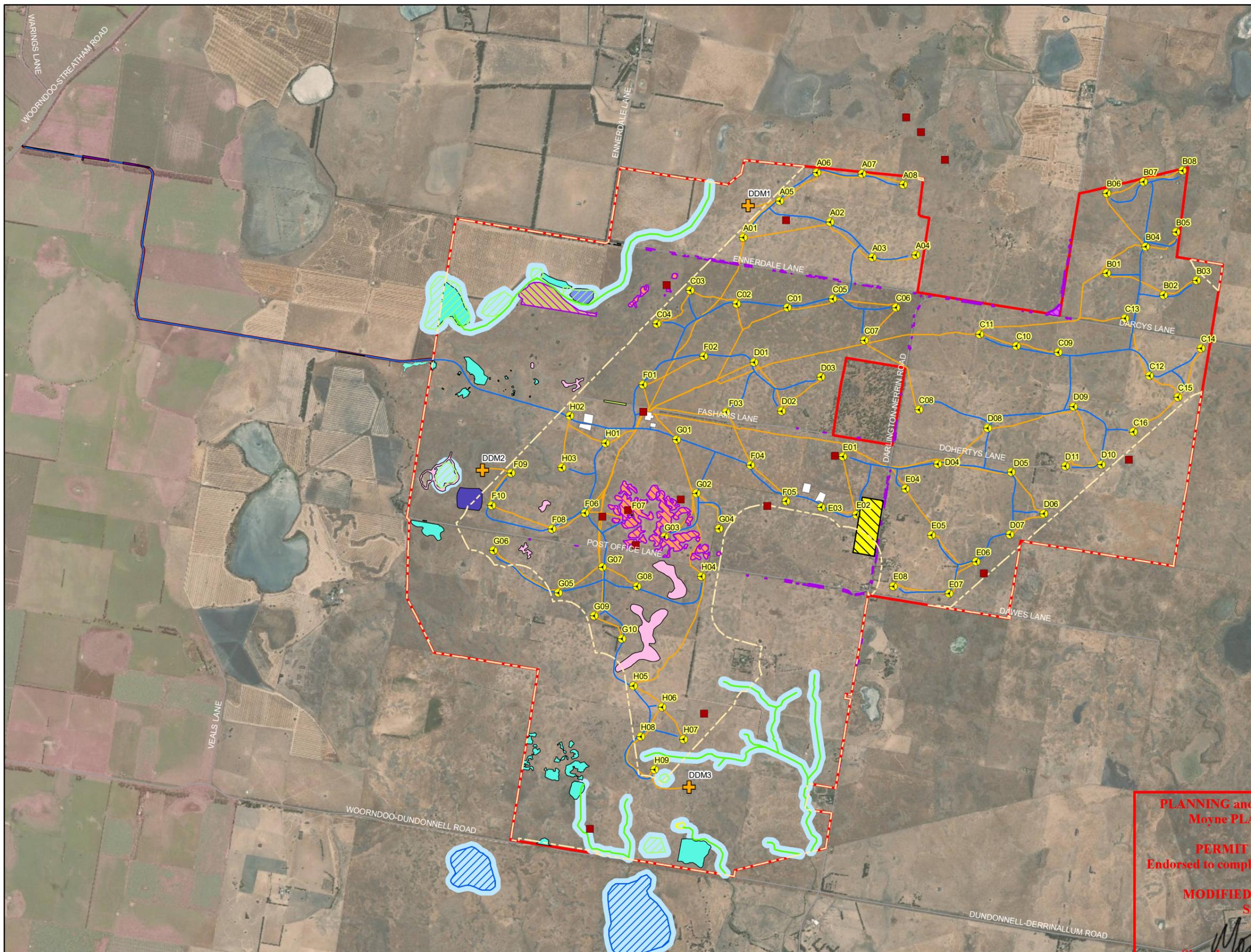
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MINISTER FOR PLANNING

Date: 09/02/2021

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Dundonnell Wind Farm
 Appendix M - Figure 2: Constraints Plan - General





- Wind Farm Layout**
- 80 Turbine Layout (As Built)
 - Permanent Met Masts
 - Access Tracks
 - Underground Cables
 - Buildings Areas
 - Project Boundary
 - Main Access
- Native Vegetation**
- EVCs**
- Aquatic Herbland (EVC 653)
 - Plains Grassland/Plains Grassy Wetland mosaic
 - Plains Grassland/Stony Knoll Shrubland mosaic
 - Plains Grassy Wetland (EVC 125)
 - Plains Grassy Wetland (EVC 125)/Plains Grassy Woodland (EVC 55)
 - Plains Grassy Woodland (EVC 55)
 - Stony Knoll Shrubland (EVC 649)
 - Stony Knoll Shrubland/Plains Grassy Woodland
 - Stony Knoll Shrubland/Plains Grassy Woodland/ Plains Grassy Wetland mosaic
 - Plains Grassland (EVC 132)
- Habitat**
- Fauna Habitat**
- Striped Legless Lizard and Fat-tailed Dunnart habitat
 - GSM Habitat
 - Striped Legless Lizard Grid Locations
- Corangamite Water Skink and Growing Grass Frog habitat**
- Confirmed habitat
 - Potential habitat - Moderate quality
 - Potential habitat - Low quality
 - Habitat Buffer (55m)
 - Drainage Lines
 - Brolga Buffers

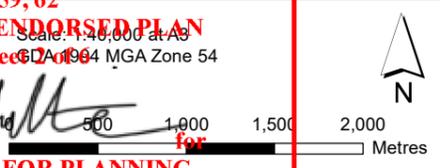
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Version: C

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Sheet 62 of 64 MGA Zone 54

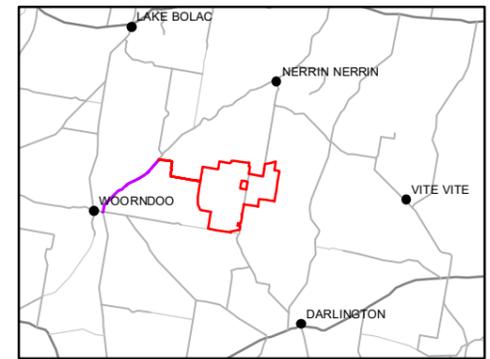
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Date: 09/02/2021



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Dundonnell Wind Farm
Appendix M - Figure 3: Constraints Plan - Native Vegetation and Fauna Habitat - Wind Farm





- Business Identification Signage
- Firefighting Water Tank
- Main Access Track
- Public Road Upgrade Extent
- Heavier-soils Plains Grassland (EVC 132_61)

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MINISTER FOR PLANNING**

SHEET 296 OF 301

Date: 20/09/2018
Version: A

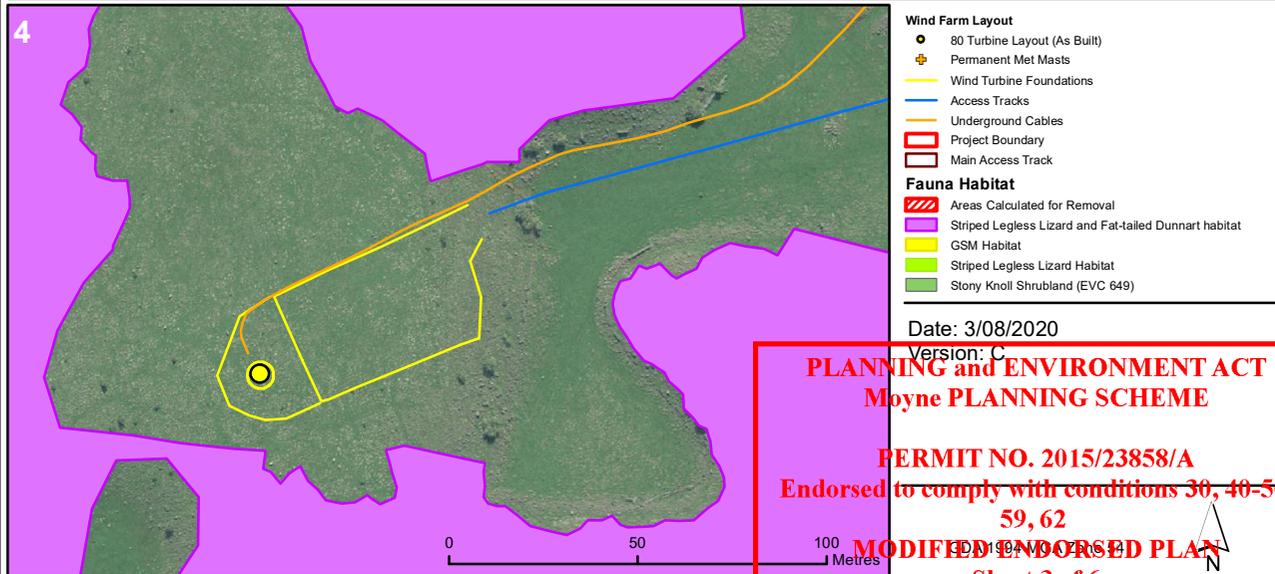
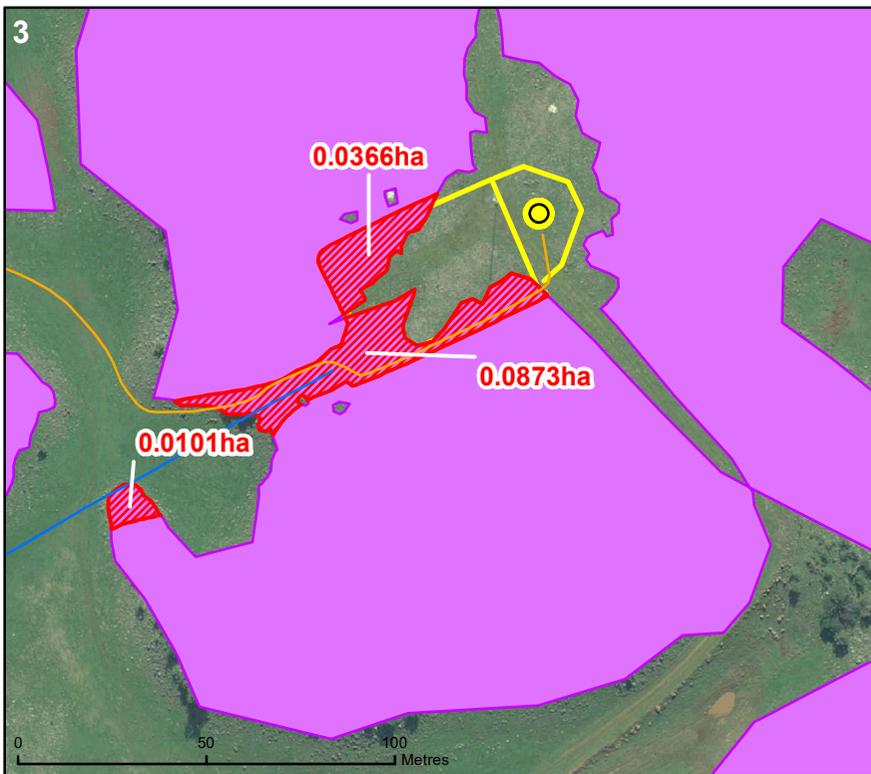
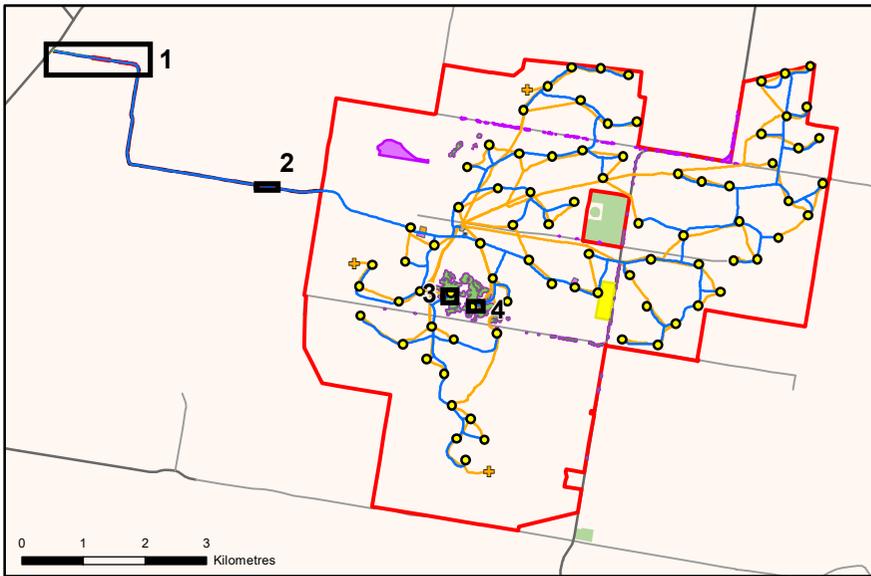
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Imagery: Google Earth Pro (Image copyright 2018 CNES /Airbus)
Base data: VicMap (Copyright © The State of Victoria, Department of Environment, Land, Water & Planning 2017)

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GDA 1994 MGA Zone 54

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Dundonnell Wind Farm - Road Upgrade
Appendix M - Figure 4: Constraints Plan - Native Vegetation and Fauna Habitat - Public Road Upgrade





- Wind Farm Layout**
- 80 Turbine Layout (As Built)
 - ⊕ Permanent Met Masts
 - Wind Turbine Foundations
 - Access Tracks
 - Underground Cables
 - ▭ Project Boundary
 - ▭ Main Access Track
- Fauna Habitat**
- ▨ Areas Calculated for Removal
 - ▨ Striped Legless Lizard and Fat-tailed Dunnart habitat
 - ▨ GSM Habitat
 - ▨ Striped Legless Lizard Habitat
 - ▨ Stony Knoll Shrubland (EVC 649)

Date: 3/08/2020
Version: C

PLANNING and ENVIRONMENT ACT
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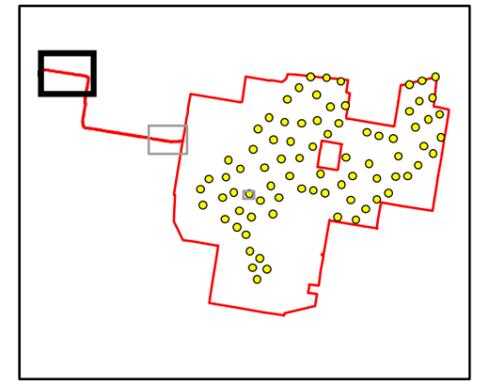
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Sheet 3 of 6

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Dundonnell Wind Farm
Appendix M - Figure 5: Fauna Habitat Removal

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- Wind Farm Layout**
- Access Tracks
 - Main Access Track
- Native Vegetation**
- Native Vegetation (Plains Grassland (EVC 132))
 - Endorsed Vegetation to be Removed (April 2019)

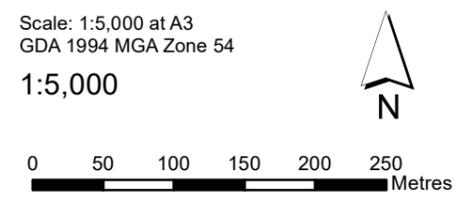
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 Sheet 4 of 6

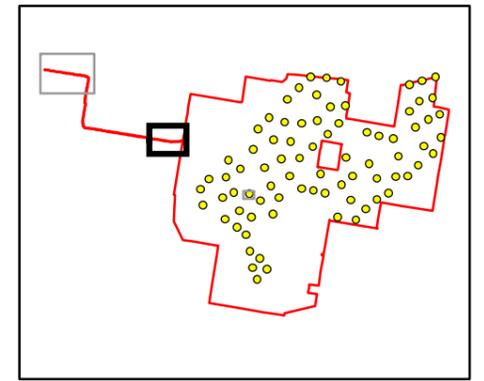
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Date: 03/08/2020
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- Wind Farm Layout**
- Access Tracks
 - Main Access Track
 - Project Boundary
- Native Vegetation**
- Native Vegetation (Plains Grassland (EVC 132))
 - Plains Grassy Wetland (EVC 125)
 - Endorsed Vegetation to be Removed (April 2019)

PLANNING and ENVIRONMENT ACT
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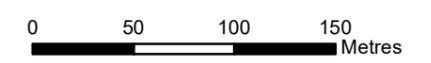
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 Sheet 5 of 6

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 Version: C

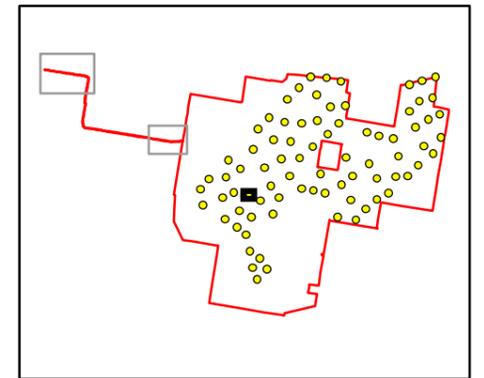
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Wind Farm Layout

- 80 Turbine Layout (As Built)
- Access Tracks
- Underground Cabling
- Hard Stand Foundations
- Project Boundary

Native Vegetation

- Stony Knoll Shrubland (EVC 649)
- Endorsed Vegetation to be Removed (April 2019)

PLANNING and ENVIRONMENT ACT
Moyne PLANNING SCHEME

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1:1,000



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